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DISCRIMINATION AGAINST INDIGENOUS PEOPLES

Report of the United Nations Technical Conference on Practical Experience in the Realization of Sustainable and Environmentally Sound Self-development of Indigenous Peoples

Rapporteur: Mr. Ingmar Egede (Inuit Circumpolar Conference)

(Santiago, Chile, 18 to 22 May 1992)

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TRADITIONAL PRACTICES IN RESPECT OF THE SUSTAINABLE AND ENVIRONMENTALLY SOUND SELF-DEVELOPMENT OF INDIGENOUS PEOPLE

Presented by: Mario Ibarra

Introduction

1. The purpose of these "introductory notes" is to define a macro-framework for discussion in respect of the topics selected for the Seminar. To be sure, they are far from exhaustive. The title of the Seminar contains terms that form part of the international debate and this is why we are seeking to establish the points of reference (definitions) in conjunction with a number of recent examples and arguments.

2. First and foremost, we bore in mind the fact that indigenous peoples, as human beings, are beneficiaries, either individually or collectively, of all the rights established in the various international instruments.

3. With regard to the individual and specific rights of indigenous peoples, it has to be recognized that there has been substantial progress at the international level, as shown by the adoption of Convention No. 169 of the International Labour Organisation (ILO), the establishment of the Working Group on Indigenous Populations and the direct participation of representatives in international forums and other activities.

4. However, at the same time as we note the progress at the international level, we can see that discrimination and the denial of the individual and specific rights of indigenous peoples continue inside the various countries. Ethnocide is a widespread constant. The contamination or destruction of their traditional habitats, the invasion of their ancestral territories and the destruction of sacred places and sites are commonplace.

5. Generally speaking, indigenous peoples live in ecosystems that are fragile or directly threatened by the modern Leviathan which takes the form of the development model imposed on them.

I. INDIGENOUS POPULATIONS

6. Two definitions are used in the international context. One is to be found in an international law instrument and the other is a "working" definition which is used as an "operational" definition in the elaboration of an instrument that is international in character.

7. The first definition is found in the Convention concerning Indigenous and Tribal Peoples in Independent Countries (Convention No. 169 of 1989) of ILO which is a revision of the Convention concerning the Protection and Integration of Indigenous and Other Tribal and Semi-Tribal Populations in Independent Countries (Convention No. 107 of 1957).

Note: The opinions expressed in this paper are those of the author.

A. ILO Convention No. 169.

8. In article 1.1.b. of Convention No. 169 we read that this instrument applies to:

> "Peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present State boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions."

9. In our opinion, this definition, which certainly contains elements already found in Convention No. 107, originated in the discussion sparked off by ILO in 1953 with the publication of the book Indigenous Peoples. Living and Working Conditions of Aboriginal Populations in Independent Countries. 1/ This work enables us to appreciate the difficulties encountered in formulating a definition that was international in scope but encompassed differing situations.

B. Study on Racial Discrimination

10. In 1965 the Sub-Commission on Prevention of Discrimination and Protection of Minorities decided to initiate a study on racial discrimination. Mr. Hernán Santa Cruz was appointed as Special Rapporteur to carry out this work and in his final report he included a chapter entitled "Measures taken in connection with the protection of indigenous peoples". 2/ The significance of this report lies in the fact that it led to a number of activities on indigenous populations within the United Nations context.

11. The Special Rapporteur establishes an operational conceptual framework for the objectives of his study when he says:

> "344. What becomes important for the purposes of the present chapter is that today there may exist in a country groups of descendants of the people who inhabited the area at the time when persons from other parts of the world arrived there, overpowered the natives and reduced them to non-dominant or subjected status.
>
> 345. These cases are relevant to this study when at a time of initial contact, these groups were different from each other in many respects, including physical appearance (race, colour) and culture (language, customs), and the native groups continue to lead a distinct existence in the midst of the community which they now belong and are subjected to unsatisfactory treatment at the hands of the presently predominant groups."

12. In paragraph 1102 of the study by Mr. Santa Cruz one can read: "As the chapter on indigenous population is only one part of the overall Study of Racial Discrimination, the subject has by no means been exhausted ... For a more thorough analysis of the extent of the problem and the national and international measures needed to solve it, the Special Rapporteur considers what the competent organs of the United Nations ... should make a complete and

comprehensive study of this problem." This recommendation was accepted by the Sub-Commission and it was decided to conduct a Study of the Problem of Discrimination against Indigenous Populations.

C. Study on discrimination against indigenous populations

13. In 1971, the Sub-Commission appointed Mr. José R. Martínez Cobo as Special Rapporteur to make, in the terms of the relevant Economic and Social Council resolution, "a complete and comprehensive study ... and to suggest the necessary national and international measures for eliminating ... discrimination." In order to carry out his work, the Special Rapporteur developed a "working definition" as follows:

> "Indigenous populations are composed of the existing descendants of the peoples who inhabited the present territory of a country wholly or partially at the time when persons of a different culture or ethnic origin arrived from other parts of the world, overcame them and, by conquest, settlement or other means, reduced them to a non-dominant or colonial condition; who today live more in conformity with their particular social, economic and cultural customs and traditions than with the institutions of the country of which they now form part, under a State structure which incorporates mainly the national, social and cultural characteristics of other segments of the population which are predominant."

14. So as to include those populations which, for some reason, have not been conquered, the working definition is supplemented to read as follows: "Although they have not suffered conquest or colonization, isolated or marginal population groups existing in the country should also be regarded as covered by the notion of 'indigenous populations' for the following reasons: (a) they are descendants of groups which were in the territory of the country at the time when other groups of different cultures or ethnic origins arrived there; (b) precisely because of their isolation from other segments of the country's population they have preserved almost intact the customs and traditions of their ancestors which are similar to those characterized as indigenous; (c) they are, even if only formally, placed under a State structure which incorporates national, social and cultural characteristics alien to theirs." 3/

15. In the "conclusions, proposals and recommendations" of this study it is stated that the fact that a definition is proposed does not mean that the discussion is concluded but that "the following lines are intended ... simply to stimulate reflection and analysis leading to the formulation of more formal proposals for definitions." 4/ Accordingly it is proposed that "indigenous populations may ... be defined as follows for the purposes of international action that may be taken affecting their future existence." 5/

16. The study goes on to state that "Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant

sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems. This historical continuity may consist of the continuation, for an extended period reaching into the present, of one or more of the following factors: (a) occupation of ancestral lands, or at least part of them; (b) common ancestry with the original occupants of these lands; (c) culture in general, or in specific manifestations (such as religion, living under a tribal system, membership of an indigenous community, dress, means of livelihood, life-style, etc.); (d) language (whether used as the only language, as mother-tongue, as the habitual means of communication at home or in the family, or as the main, preferred, habitual, general or normal language); (e) residence in certain parts of the country, or in certain regions of the world; (f) other relevant factors." 6/

17. This definition is supplemented as follows: "On an individual basis, an indigenous person is one who belongs to these indigenous populations through self-identification as indigenous (group consciousness) and is recognized and accepted by these populations as one of its members (acceptance by the group). This preserves for these communities the sovereign right and power to decide who belongs to them, without external interference." 7/

18. This definition was accepted as an "operational definition" by the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities Working Group on Indigenous Populations. That decision was adopted by the Working Group in 1982 in the course of its first session.

II. DEVELOPMENT

19. "An objective reading of the Charter of the United Nations, the Universal Declaration of Human Rights, the two Covenants and the other human rights instruments, including the declarations by various United Nations organs and specialized agencies indicates, at least from the declarative viewpoint, that efforts are being made to seek greater happiness for the human species." 8/ As far as the right to development is concerned, "some writers call it a 'supra right', in other words, they regard it as a right which is above all human rights, which crowns all rights and which is the prerequisite for the enjoyment and exercise of all rights (political, civil, economic, social and cultural). Other writers describe it as a 'third generation' right, in other words, a right which emerges as a result of an overall awareness on the part of mankind as a whole and they see it as an aspiration of the human species and in particular the so-called third world". 9/

A. General provisions in international law

20. We find a human concern with the progress of the human species which later on will be called development in the Charter of the United Nations. This idea of development is based on the conviction of the existence of "A close link between economic, social and cultural development and the realization of human rights ...". 10/

21. In resolution 1161 (XII) of 26 November 1957 the United Nations General Assembly stated that "a balanced and integrated economic and social development would contribute towards the promotion and maintenance of peace and security, social progress and better standards of living, and the observance of, and respect for, human rights and fundamental freedoms for all".

22. The third preambular paragraph of the International Covenant on Economic, Social and Cultural Rights (1966) reads: "Recognizing that, in accordance with the Universal Declaration of Human Rights, the ideal of free human beings enjoying freedom from fear and want can only be achieved if conditions are created whereby everyone may enjoy his economic, social and cultural rights, as well as his civil and political rights".

23. The International Conference on Human Rights held in Tehran, Iran, in 1968 expressed its conviction that "the enjoyment of economic and social rights is inherently linked with any meaningful enjoyment of civil and political rights and that there is a profound interconnection between the realization of human rights and economic development".

24. On 13 March 1969, the Commission on Human Rights affirmed in resolution 15 (XXV): "That the ultimate objective of any effort to promote economic development should be social development of peoples, the welfare of every human being and the full development of his personality".

25. The Declaration on Social Progress and Development adopted by the General Assembly on 11 December 1969 states in its eighth preambular paragraph: "Emphasizing the interdependence of economic and social development in the wider process of growth and change, as well as the importance of a strategy of integrated development which takes full account in all stages of its social aspects".

26. The Declaration on the Right to Development adopted by the General Assembly on 4 December 1986 states in its second preambular paragraph that "development is a comprehensive economic, social, cultural and political process, which aims at the constant improvement of the well-being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom".

27. Article 1 of the Declaration defines what the United Nations understands by development:

> "Art. 1.1. The right to development is an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized.
>
> Art. 1.2. The human right to development also implies the full realization of the right of peoples to self-determination, which includes, subject to the relevant provisions of both International Covenants on Human Rights, the exercise of their inalienable right to full sovereignty over all their natural wealth and resources.

Art. 2.1. The human person is the central subject of development and should be the active participant and beneficiary of the right to development.

Art. 2.2. All human beings have a responsibility for development, individually and collectively ...".

B. ILO Convention No. 169

28. In its fifth preambular paragraph, the International Labour Organisation (ILO) Convention No. 169 states:

"Recognizing the aspirations of these peoples to exercise control over their own institutions, ways of life and economic development and to maintain and develop their identities, languages and religions, within the framework of the States in which they live."

29. Article 2 of the Convention spells out the responsibility of Governments for developing coordinated and systematic action to protect individual and specific rights and to guarantee respect for the peoples concerned. Paragraph 2 (b) of the article calls upon Governments to include measures for "promoting the full realization of the social, economic and cultural rights of these people with respect for their social and cultural identity, their customs and traditions and their institutions".

30. Article 7 is much more specific and reads:

"1. The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly.

2. The improvement of the conditions of life and work and levels of health and education of the peoples concerned, with their participation and cooperation, shall be a matter of priority in plans for the overall economic development of areas they inhabit. Special projects for development of the areas in question shall also be so designed as to promote such improvement.

3. Governments shall ensure that, whenever appropriate, studies are carried out, in cooperation with the peoples concerned, to assess the social, spiritual, cultural and environmental impact on them of planned development activities. The results of these studies shall be considered as fundamental criteria for the implementation of these activities."

C. Ethno-development

31. In 1981, the United Nations Educational, Scientific and Cultural Organization (UNESCO) convened a meeting of experts on ethnocide and

ethno-development, who discussed and drafted a document known as the Declaration of San José on Ethnocide and Ethno-development. The Declaration reads:

> "2. We affirm that ethno-development is an inalienable right of Indian groups.
>
> "3. By ethno-development we mean the extension and consolidation of the elements of its own culture, through strengthening the independent decision-making capacity of a culturally distinct society to direct its own development and exercise self-determination, at whatever level, which implies an equitable and independent share of power. This means that the ethnic group is a political and administrative unit, with authority over its own territory and decision-making powers within the confines of its development project, in a process of increasing autonomy and self-management."

D. Working Group on Indigenous Populations

32. The draft universal declaration on the rights of indigenous peoples, which is being prepared by the Working Group on Indigenous Population of the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities states in operative paragraph 13:

> "Indigenous peoples have the right to adequate financial and technical assistance, from States and through international cooperation, to pursue freely their own economic, social and cultural development, and for the enjoyment of the rights contained in this Declaration." 11/

33. ILO Convention No. 169, the UNESCO Declaration of San José, the NGO Conferences on Discrimination against Indigenous Populations (1977 and 1981), 12/ the meetings of indigenous organizations and the draft declaration being prepared by the Working Group on Indigenous Populations attempt, in our view, to put an end to the outrages that indigenous populations have suffered in the name of development.

E. Development and indigenous populations

34. Two problems appear to be linked to development. "The first is related to the 'national development programmes' sponsored by nation-States and the second is related to the 'development programmes' also sponsored by nation-States 'for' indigenous populations." "The development programmes promoted centrally by nation-States and pompously called 'national development' programmes do not take into account either the interests or the claims of indigenous populations and do not respect their economic and cultural rights; in the name of development entire populations have been uprooted or condemned to live in poverty, to survive physically and to die culturally. These programmes (or projects), which are also described as being in the 'national interest' may be dams, motorways, airports, railways, the exploitation of soil or subsoil resources, etc. have been in practice declarations of terra nullius in which the human societies and cultures of the region are of no importance. The only thing that matters is the 'national interest' which is like a cloak that conceals the interests of national,

economic groups or, simply, the interests of foreign transnational corporations." "Since the 'civilizing' wars of the post-independence era, a new monster called 'development' has appeared which does not respect the land, the men who inhabit the land or the cultural and spiritual heritage which the land contains ...". "In speaking of the 'development programmes' sponsored centrally 'for' indigenous populations, we are bound to say that Governments regard these populations as being in a state of capitis diminutio, in other words, they consider them to be incompetent or minors in the eyes of the law for the purposes of stating their claims. In the absolute view of the State, decisions taken centrally must necessarily affect indigenous populations; in this way, the cultural traits, claims and wishes of these populations are denied and the development programmes advocate integration and assimilation and the use of force, if need be, for that end." "It would take a long time to describe the ridiculous aspects of centrally promoted development: houses built for the indigenous populations which were not used because they did not correspond to their cultural lifestyles; 'gifts' of cooking stoves that used paraffin (kerosene) for populations living in the forest; agricultural implements 'offered' to populations living by fishing, etc. In the final analysis, an absolute verticalism is applied which disregards and denies the populations for which, theoretically, the programme or project is intended". 13/

35. The lengthy quotation in the previous paragraph is a synthesis of what we have heard, read and seen for ourselves. We think that the industrial development model and option which was considered and defended as the promoter of progress for mankind is today being questioned and we have an obligation to question it. This idea of progress is at odds with the conception which the indigenous populations maintair, and seek to preserve, of the Earth and nature.

36. It may by way of example, be appropriate to quote the complaint made by an indigenous organization during the forty-eighth session of the United Nations Commission on Human Rights, when it stated: "In Panama, Kunas and Embera communities were evicted in order to construct a hydroelectric power station. The land was turned into a lake covering 18,000 hectares. The power station supplies 40 per cent of the Republic of Panama's electricity, but the Kunas and the Embera have no electricity. In addition to the irreparable damage caused to nature, we have to say that these communities have not been compensated and we fear that there may be serious conflicts". 14/

F. The self-criticism of development

37. Early in 1980, when it began to be seen that the "honeymoon" between high technology, industrialization, the irrational use of natural resources and development was drawing to an end and, at the same time, when the damage which this development option was causing to the environment became evident, an author wrote: "No amount of technological fix can resolve the problems of poverty and development. (Development) demands an approach of humility and respect, of cooperation and the sacrifice of cherished vested interests, and it depends upon participation and wisdom. Development, in short, is an art as well as a science. (It is necessary to accept the fact) that just relationships between countries, and between communities and individuals within countries, are the fundamental precondition for development". 15/

38. It should be emphasized that the 1980s were considered within the United Nations system as "lost years for development". The challenge of development made it necessary to consider the civil, political, economic, social and cultural rights set forth in international instruments but never implemented. Development plans, projects and programmes sponsored by intergovernmental organizations, development aid agencies and non-governmental organizations had to admit defeat. The gap between the developed world and the developing world widened, social inequalities increased and while one world discussed what to do with its over-production of agricultural produce the other was starving to death.

39. At the beginning of the 1990s, people began to talk about "human development", that is to say, a start was made on reversing the trend of measuring progress simply and solely in terms of Gross National Product (GNP) and to introduce the Human Development Index (HDI) as the instrument of measurement. The HDI consists of three indicators for measuring development: (a) life expectancy (which implies health and living conditions), (b) literacy (which implies education, the ability to hold down a job and to appreciate one's surroundings and culture) and (c) purchasing power (which implies the ability to buy products and to satisfy basic needs).

40. The Human Development Report 1990 studies the relationship between economic growth and human development and draws attention to the irrational allocation of resources for the developing countries. "The authors of the report note that the poverty of the population in the developing world has quite obviously not prevented the armies of those countries from living in the midst of plenty." 16/*

41. The United Nations Development Programme (UNDP) drawing up, as it were, a balance sheet of 40 years' work, notes in plain language, the errors committed. In an article which quotes world figures involved in development one can read: "The major financing institutions believed that it would be enough to inject a few doses of capital in order to secure a take off". "We were confident that we were acting on the basis of rational certainties. However, today, we have doubts". "Initially, there was a naive belief that it would be possible to close the gap between North and South quickly. In fact, many countries went in for industrialization and some even experienced spectacular growth. However, the development model that was pursued merely created further inequalities". "In the early stages it was thought that the developing countries should up to a point achieve levels of consumption comparable to those of the United States of America, but that was not realistic, for ecological reasons". "Indebtedness and its painful consequences revealed the fragility of the social system in most countries". "Most of the time aid has, in practice, sabotaged the bases for development by creating situations of dependence". 17/*

G. Global consultation and the development of indigenous populations

42. From 8 to 12 January 1990, the Global Consultation on the Realization of the Right to Development as a Human Right convened by the Secretary-General of the United Nations was held in Geneva, Switzerland. The report of this meeting reads:

"104. The experience of indigenous peoples and development clearly demonstrated that human rights and development are inseparable, for the abuse of the rights of indigenous peoples is principally a development issue. Forced development has deprived them of their human rights, in particular the right to life and the right to their own means of subsistence, two of the most fundamental of all rights. Indigenous peoples have been, in fact, victims of development policies which deprive them of their economic base - land and resources, and they are almost never the beneficiaries.

105. It was underlined that the most destructive and prevalent abuses of indigenous rights are a direct consequence of development strategies that fail to respect the fundamental right of self-determination. Using illustrations, participants described how indigenous people are routinely perceived as obstacles to development and excluded from decision-making in matters that affect them. The result has been the elimination and degradation of the indigenous land base; destruction, degradation and removal of natural resources, waters, wildlife, forests and food supplies from indigenous lands either through commercial exploitation or incompatible land use; the degradation of the natural environment; removal of indigenous peoples from their lands; and their displacement or pre-emption from the use of their lands by outsiders". 18/

H. Study on human rights and the environment

43. The preliminary report on human rights and the environment prepared for the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities shows the close link which exists between the indigenous peoples' way of relating to the land and nature, the impact of development on the habitat of those peoples and the violation of their rights.

44. The preliminary report states:

"26. There are over 200 million indigenous people in the world and many of them live in some of the world's most vulnerable ecosystems: the arctic and tundra, the tropical rainforests, the boreal forests, riverine and coastal zones, mountains and semi-arid rangelands. In the last 40 years or so, these lands have come under unprecedented pressure as Governments, development banks, transnational corporations and entrepreneurs search out resources to supply the growing demand of industrialized countries as well as of the fast-swelling populations of the nations of the South. The territories used and occupied by indigenous peoples are often seen as important repositories of unexploited riches. Once largely inaccessible, these regions and their mineral deposits, hydro-electric potential, hardwoods, oil and new farm and pasture lands have been put within reach by modern technology.

"27. The prevailing development process ... is not only damaging to the environment but may also be harming the way of life of many people, and especially indigenous peoples. Indeed, it can be said that all environmental degradation has a direct impact on the human rights of the indigenous peoples dependent on that environment. For example, where there is unrestrained deforestation, forest-dwelling indigenous peoples

may be forced from their traditional homelands, may thereby be denied a means of livelihood, may be driven to take refuge among strangers and, in the most extreme cases, may fall victim to diseases against which they have no immunity. Similarly desertification, a phenomenon which is as much man-made as it is an act of nature, has led many self-sufficient pastoralists to an impoverished existence in refugee camps. Even smaller-scale environmental sacrifices - the inundation caused by dam-building, mining, prospecting and so on - have affected indigenous peoples all over the world, causing them to leave lands they have occupied for generations, often without their willing consent or any compensation. Indigenous peoples may, thus, be victims of inappropriate development and environmental degradation. As such their fundamental freedoms and human rights are affected." 19/

45. Thus, without being consulted or participating in discussions or decision-making, the indigenous populations were direct victims of a development model and option which today threaten our planet. The first cries of alarm were not heeded and the association between industrialization, irrational exploitation of natural resources and the development option and model mentioned was not made.

I. The "cries of alarm"

46. The expression "cries of alarm" refers to the unheeded warnings made by a number of scientists, philosophers, economists and researchers. The philosopher Lucretius, the poet Virgil and the agronomist Columela already, in ancient Rome, raised certain issues relating to what we now call "ecology". In the last century, the economist A. Smith predicted that there would come a time when the Earth's natural resources would be depleted. Charles Darwin observed the changes that had occurred in trees and butterflies as a result of industrialization. Great Chief Seattle was in our view the person who most lucidly foresaw or prophesied the future of the Earth unless the sacred character that it has under indigenous philosophy is respected.

J. UNESCO and the MAB Programme

47. In 1968 a Biosphere Conference, held in Paris, France, under the auspices of UNESCO, proposed the Man and the Biosphere (MAB) Programme which is intended "to develop within the natural and social sciences a basis for the rational use and conservation of the resources of the biosphere and for the improvement of the relationship between man and the environment; to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere". 20/

48. One important result of this Conference was the decision to establish "biosphere reserves". The first were set up in 1976, and by 1991 there were 300 such reserves all over the world; the smallest, only 300 hectares in area, is at North Bull Island, Ireland, while the largest - 70 million hectares in area - is situated in north-eastern Greenland. "Biosphere reserves are first and foremost representative ecological areas (in which human beings are

an integral element) and include examples of many of the great biogeographical provinces of the world. They also combine nature conservation with research, environmental monitoring, training, demonstration and local participation". 21/

49. The MAB Programme seeks "to solve concrete and specific land-use planning problems which, in the view of both local planners and scientists, deserve to be given top priority. To solve these very complex problems, interdisciplinary research teams had to be created. Research activities were linked to training, to field demonstrations and environmental education. And, because of the inevitable budgetary constraints that exist in all countries, full use was made of international machinery to coordinate national efforts and thus multiply the human and financial resources available. Finally, MAB applied the experimental method of 'learning by doing', drawing experience from the successes and failures of field work, and adopted a flexible approach in response to the changing needs and emerging priorities of the various countries". 22/

50. Another important feature of the MAB Programme is the "participation of the local population at the outset when research priorities are planned, participation of the various disciplines of the natural and human sciences, and participation of decision-makers and planners". 23/

K. The United Nations and the environment (from Stockholm to Rio)

51. Following the end of the Second World War, an industry-oriented development option and an almost warlike relationship with nature came to prevail everywhere in the world. The disappearance of the Aral Sea as a result of the diversion of water for large-scale cotton cultivation, the enormity of the problems confronting the industrialized countries in dealing with their chemical, radioactive and industrial wastes, the "ecological bankruptcy" facing some developing countries or the disappearance of certain species of flora and fauna are some examples of why the United Nations system came to concern itself with the problem of the environment as from the early 1970s.

52. "One of the major landmarks of the period was the Meeting of the Panel of Experts on Development and Environment, held at Founex, Switzerland, from 4 to 12 June 1971. The Meeting prepared a document on the state of the human and natural environment on our planet. This then became one of the bases for the United Nations Conference on the Human Environment held at Stockholm in 1972, which resulted in a Declaration and an Action Plan for the Human Environment ...". "The Stockholm Conference led to the establishment of the United Nations Environment Programme (UNEP) as the global instrument for giving effect to the consensus achieved at the Meeting". 24/*

53. The Stockholm Conference marked the first step towards incorporating the environmental dimension in development policies and practices. In 1980, UNEP, the International Union for Conservation of Nature and Natural Resources (IUCN) and the World Wide Fund for Nature (WWF) published World Conservation Strategy. This document represented "the first systematic attempt to make sustainability paramount among environmental concerns. That report began by defining

'conservation' as 'the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations'". 25/

54. In 1987 the World Commission on Environment and Development headed by Mrs. Gro Harlem Brundtland published its report on "Our Common Future". "The Commission's report documented in imperative terms the cause of sustainable development, namely the full integration of the environment and development as the only cogent and viable means of ensuring the future both of our environment and of development ...". 26/*

55. After considering "Our Common Future", the United Nations General Assembly decided, in December 1989, to convene another conference. This will be held in Rio de Janeiro in June 1992. The aims and tasks of the Preparatory Committee for the "Earth Summit" were spelt out by the General Assembly in its resolution 44/228.

L. Economic Commission for Latin America and the Caribbean (ECLAC)

56. The ECLAC secretariat, noting the problems connected with development and the environment, put forward a proposal for the development of the countries of the region stressing the need to "reverse negative trends in the depletion of natural resources, the growing degradation brought about by pollution and global imbalances ... and to seize the opportunities for using natural resources on the basis of research and conservation". 27/

57. An ECLAC publication states that "those responsible for economic policy in the region must include environmental sustainability among their variables, not only to meet the needs of future generations but also as a vital element in ensuring sustained growth to the benefit of present generations". 28/ Some Latin American countries, like the developed countries, have made environmental impact studies a sine qua non of development plans and projects.

III. AUTONOMY, FREE CHOICE AND SELF-DETERMINATION

58. The issue of autonomy has been a focal point in all discussions on the individual and specific rights of indigenous populations. This debate, which is as old as schemes of conquest themselves, ranges from speculation as to whether or not the indigenous populations are entitled to autonomy to assertions that autonomy for the indigenous populations would pose a threat to the territorial integrity of States.

59. In some countries where treaties or other agreements were signed between the indigenous peoples and the present States or the colonial Powers, this debate has already been under way for a long time. The indigenous peoples argue that those instruments were signed by their forebears as legitimate representatives of sovereign, independent peoples. A reading of those documents, which generally relate to transfers of land to settlers or the Government, shows us that these are cases of autonomy that is nowadays denied.

A. General provisions

60. At the international level, common article 1 (1) of the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights reads:

> "All peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development." 29/

B. International NGO Conference, 1981

61. In 1981 the International NGO Conference on Indigenous Peoples and Land, held at Geneva, Switzerland, adopted a number of principles including the following:

> "(a) Indigenous nations, peoples and groups were neither minorities nor social classes but peoples entitled to self-determination;
>
> (b) The States concerned should recognize and guarantee land rights on a territorial basis. Only the indigenous peoples had the right to decide on their own forms of land holding and use within their territories, in accordance with the freedom to propagate their own culture. Land rights included ownership of all natural resources;
>
> (c) Land rights and the right to self-determination were inseparable."

62. It should here be recalled that the International NGO Conference requested the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities to appoint a Special Rapporteur to study, in particular, the right of indigenous peoples to self-determination. The Sub-Commission did not accede to this request.

C. Managua Seminar, 1981

63. The progress of the debate was slow and problematic. For instance, the report of the United Nations Seminar on recourse procedures and other forms of protection available to victims of racial discrimination and activities to be undertaken at the national and regional levels, held at Managua, Nicaragua, in 1981, states the following:

> "54. Reference was made to the fact that the right of self-determination was expressed at several levels and included economic, social and cultural, as well as political factors that must be studied in each case. As contemplated in United Nations language, that right in the largest sense of its 'external' manifestations meant the right of statehood, also including the right to choose various forms of association with other political communities.
>
> 55. It was also mentioned that the right of self-determination, however, also arose on an internal level of national society, where a people or

group having a defined territory might be autonomous in the sense of having a separate and distinct administrative structure and judicial system determined by and internal to themselves ...". 30/

64. The Seminar's recommendations include the following:

"(m) Self-determination in its many forms was the basic precondition to the possibility for indigenous populations to enjoy their fundamental rights and to determine their future and preserve, develop and transmit to future generations their ethnic specificity". 31/

D. Study of the problem of discrimination against indigenous populations

65. The conclusions, proposals and recommendations of the study of the problem of discrimination against indigenous populations include the following:

"580. Self-determination, in its many forms, must be recognized as the basic precondition for the enjoyment by indigenous peoples of their fundamental rights and the determination of their own future.

581. It must also be recognized that the right to self-determination exists at various levels and includes economic, social, cultural and political factors. In essence, it constitutes the exercise of free choice by indigenous peoples, who must, to a large extent, create the specific content of this principle, in both its internal and external expressions, which do not necessarily include the right to secede from the State in which they live and to set themselves up as sovereign entities. This right may in fact be expressed in various forms of autonomy within the State ...". 32/

66. For a long time, discussions on the rights of indigenous populations used the terms "autonomy", "self-determination" and "free choice" interchangeably; little by little, the issue was clarified. The passages quoted in the previous paragraph were decisive in clarifying ideas, calming down the debate and initiating a discussion on the various forms which the right to self-determination might take in the specific case of indigenous populations. It was seen that practices existed in some countries with forms of self-determination that began to be known as "internal autonomy". It should be understood that internal autonomy is one element of the right to self-determination and that it is for each people to decide upon the administrative and legal framework within which this right is to be exercised.

E. The Nuuk Meeting, 1991

67. The Meeting of Experts to review the experience of countries in the operation of schemes of internal self-government for indigenous peoples held at Nuuk, Greenland, in 1991 provided an opportunity for a productive debate and clarified a number of important points.

68. A background paper submitted to the Nuuk Meeting states:

"Autonomy within the State is one of the various forms in which the right to self-determination of the indigenous peoples can be expressed.

Meeting this historic and specific claim is one way of giving effect to the principle of equality of rights between peoples and to the genuine, real and comprehensive realization of their human rights and fundamental freedoms.

"It is a means of exercising self-determination in such a way that it does not attack or affect the territorial integrity of the State. It is a more profound and equitable conception of political unity within the State. This means reorienting the State's policies, and transcending antiquated assimilationist and integrationist concepts and replacing them by respect and esteem for the indigenous ethnic identity, appreciation of their cosmovision, customs and traditions and support for their efforts to give an effective content to their rights as peoples and individuals within the framework of a just pluralism. It is also a direct and integral way of constructing democracy, while satisfying just indigenous aspirations and demands.

"On the basis of a new pluralist State structure, autonomy seeks to restore to the indigenous peoples in a significant degree a real and effective opportunity to re-establish their own institutions themselves within their cosmovision and on the basis of their values, customs and traditions, thus resuming the pursuit of their historical project as peoples as they themselves see it today." 33/

69. Although we have requested the Centre for Human Rights to distribute the full report of the Nuuk Meeting, it seems appropriate to quote a few paragraphs from the conclusions and recommendations:

"1. The self-determination of peoples is a precondition for freedom, justice and peace, both within States and in the international community.

2. Indigenous peoples have the right to self-determination as provided for in the International Covenants on Human Rights and public international law and as a consequence of their continued existence as distinct peoples. This right shall be implemented with due consideration to other basic principles of international law. An integral part of this is the inherent and fundamental right to autonomy and self-government.

3. Self-government, self-administration and self-management of indigenous peoples constitute elements of political autonomy. The realization of this right should not pose a threat to the territorial integrity of the State.

4. For indigenous peoples, autonomy and self-government are prerequisites for achieving equality, human dignity, freedom from discrimination and the full enjoyment of all human rights.

9. Autonomy and self-government are essential for the survival and further development of indigenous peoples and are a basis for international cooperation and bilateral and multilateral legal arrangements." 34/

F. Working Group on Indigenous Populations

70. The draft declaration being prepared by, the Working Group on Indigenous Populations states:

Thirteenth preambular paragraph:

> "Noting that the International Covenants on Human Rights affirm the fundamental importance of the right to self-determination, as well as the right of all human beings to pursue their material, cultural and spiritual development in conditions of freedom and dignity."

Fourteenth preambular paragraph:

> "Bearing in mind that nothing in this Declaration may be used as an excuse for denying to any people its right to self-determination."

Operative paragraph 1:

> "Indigenous peoples have the right to self-determination, in accordance with international law. By virtue of this right, they freely determine their relationship with the States in which they live, in a spirit of coexistence with other citizens, and freely pursue their economic, social, cultural and spiritual development in conditions of freedom and dignity." 35/

IV. SUSTAINABLE DEVELOPMENT

71. It should first be said that the expression "desarrollo sostenible" is a not very felicitous translation of the English term "sustainable development"; the terms "sustentable", "sostenible", "durable" and "duradero" have also been used in Spanish. The expression implies a growth of awareness and a search for a development policy reflecting variables and the impact of human activity on the environment, in other words it implies an attempt to take account of the relationship between the economy and the biosphere.

72. According to two writers, "sustainable development should be understood as development that is at once supportable, viable and durable, in other words development which satisfies the needs of the present without diminishing the capacity of future generations to meet their own needs". 36/ This presents the challenge of establishing a relationship of "intergenerational equity".

A. Generational responsibility

73. Intergenerational equity comprises three basic principles:

> "- each generation must conserve the diversity of the natural and cultural resource base, so that it does not unduly restrict future generation's options. Each generation is entitled to diversity comparable to past generations.

- each generation must maintain the quality of the planet so that it is passed on in no worse condition than it was received. Each is entitled to inherit an Earth comparable to the Earth which sustained its forebears;

- each generation should provide its members with equal rights of access to the legacy from past generations". 37/

B. Major threats

74. This new approach to development is a response to a model and option which threaten the natural balance of the planet and reflects a new awareness of the limits of growth and development and the global risks. Some scientists consider that the following four problems pose the most serious threats to the Earth: (a) acid rain; (b) depletion of the ozone layer; (c) the increase in the greenhouse effect; and (d) the rapid depletion of tropical forests.

75. The sum of "local" environmental problems should also be regarded as a global problem. They include desertification, salinization, deforestation, air pollution in the major cities and industrial regions, pollution of groundwater sources, overexploitation of renewable and non-renewable natural resources, industrial accidents (nuclear, chemical and other), "cement cancer", serious respiratory and pulmonary diseases, disappearance of species of flora and fauna, pollution of rivers and seas by industrial, chemical or nuclear wastes, pollution through fuels, pollution caused by the misuse of pesticides, insecticides and chemical fertilizers in agriculture, uncontrolled rubbish dumps, etc., etc.

76. "Local" environmental pollution, which could generally be avoided if the necessary awareness existed, requires the adoption of urgent measures in the areas of education, prevention, and punishment of polluters. In some countries the idea that the polluter should pay has been gaining ground, but it is impossible to measure in money terms the damage caused to nature and the local population. The examples of the Exxon Valdez, the ship which polluted the Alaska coastline, or the ecological effects of the Gulf War are sufficient to show the difficulty, not to say impossibility, of assessing damage in monetary terms. Some authors have suggested that an offence of "ecocide" should be introduced at the national and international levels.

1. Acid rain

77. Acid rain results from the acidification of the atmosphere caused by human activity leading to an increase in sulphur-oxide and nitrogen-oxide emissions. These compounds derive mainly from the use of fossil fuels. Acid rain has caused what is termed "forest dieback" and was identified in 1968 when the Swede S. Oden asserted that the problems of Scandinavian forests resulted from emissions by heavy industry in Great Britain and Central Europe. Acid rain affects "the whole of north-eastern Europe, much of the eastern United States and Canada, Mexico, the northern Andes, various forest areas in Africa, much of the Indian subcontinent and part of China". 38/

2. Depletion of the ozone layer

78. The depletion of the ozone layer is due mainly to man's use of chlorofluorocarbons (CFCs), which affect the stratospheric ozone layer enveloping the Earth. The stratospheric ozone layer plays a vital role in absorbing UV-B and UV-C rays, which are highly damaging to any form of life on Earth. The alarm raised by scientists and the appearance of a "hole" in the ozone layer over Antarctica led to the signature of the 1987 Montreal Protocol which provides for an initial reduction in the use of CFCs and the gradual discontinuance of production. Despite this, scientists say that the ozone layer will continue to shrink, and it is not known whether it can recover its earlier or normal condition.

3. The greenhouse effect

79. The increase in the greenhouse effect entails a rise in the world's temperature. Scientists do not agree on the specific consequences which this might have, but the least alarmist among them predict a catastrophe due to the melting of polar ice-caps and continental glaciers. Coastal regions and low-lying islands would be the most seriously affected, and the entire canal and port infrastructure would be endangered. The greenhouse effect is due to the presence in the atmosphere of gases produced by human activity: carbon dioxide (CO_2) represents 60 per cent, CFCs 15-20 per cent, methane (CH_4) 15-20 per cent, and nitrogen dioxide (NO_2) the rest. These gases are generated by the use of fossil fuels and industrial activity. This raises a question mark about the whole development model of the industrialized countries.

4. Depletion of tropical forests

80. Although there is some discussion among scientists as to how far tropical forests act as a "lung" for the Earth as a whole, there is no dispute that they are an element regulating the quantity of oxygen and rainfall. Moreover, for thousands of years they have been the home of peoples and cultures which, without the forests, would disappear physically and culturally. Moreover, these forests contain priceless flora and fauna.

81. In a publication which appeared in the early 1980s, it was claimed that "today, between 20 and 30 hectares of tropical forest is being cut down every minute". 39/ With regard to other forests, it has been written that "in the 1950s, one third of Ethiopia was covered by forests; by 1978 the figure had fallen to 4 per cent and by 1990, to 1 per cent. Similarly, until the early twentieth century, forests occupied more than half of the surface area of India, whereas by 1990 they accounted for only 14 per cent". 40/

82. "It is estimated that each year between 11 and 15 million hectares of tropical forest are lost. Tropical forests, which cover only 7 per cent of the world's land area, contain over half the known plant and animal species, including 80 per cent of insects and 90 per cent of primates. Half the world's main crops originated in tropical forests. Twenty-five per cent of drug prescriptions in the United States owe active ingredients to plants, but under 1 per cent of species have been investigated. It is thought that about 1,400 forest plants may have

anti-cancer potential. Fifty-thousand square kilometres of closed tropical forest are logged annually. Loggers take only between 4 and 10 per cent of trees, but leave up to one third of the land surface bare and open to erosion. Eighty per cent of all forest lands are owned by governments. Europe accounts for 40 per cent of global trade in tropical timber by volume and 32 per cent by value." 41/

83. The rapid depletion of tropical and other forests is due essentially to an unsound development option, the need for strong currency, high demand, the level of mechanization of the logging industry, the need for fuel, the need for new land for exportable crops and runaway population growth. The combination of these various factors explains the failure to respect the peoples and cultures that have traditionally lived with, from and in their forests.

V. ARRANGEMENTS, MEASURES AND SUGGESTIONS FOR PROTECTING THE ENVIRONMENT OF THE INDIGENOUS POPULATIONS

84. The seventh preambular paragraph of ILO Convention No. 169 states:

"Calling attention to the distinctive contributions of indigenous and tribal peoples to the cultural diversity and social and ecological harmony of humankind and to international co-operation and understanding".

85. Article 7 (4) of the Convention reads:

"Governments shall take measures, in co-operation with the peoples concerned, to protect and preserve the environment of the territories they inhabit".

86. The draft universal declaration on the rights of indigenous peoples being prepared by the Working Group on Indigenous Populations provides as follows:

"Indigenous peoples have the right to the protection of their environment and productivity of their lands and territories, and the right to adequate assistance including international cooperation to this end. Unless otherwise freely agreed upon by the peoples concerned, military activities and the storage or disposal of hazardous materials shall not take place in their lands and territories" (operative para. 17).

87. In its seventeenth recommendation, the United Nations Seminar on the effects of racism and racial discrimination and on the social and economic relations between indigenous peoples and States held at Geneva, Switzerland, in 1989 "recognizes the fundamental relationship between respect for indigenous rights and protection of the world's environment and recommends that this relationship be recognized explicitly in the work of the United Nations Environment Programme, in cooperation with indigenous peoples' organizations".

88. The report of the United Nations Secretary-General on the Global Consultation on the Right to Development as a Human Right, held at Geneva, Switzerland, in 1990, includes the following statement:

"106. In order to ensure that principles to protect the social and cultural environment of indigenous peoples are respected, sustainable development must also be equitable from an indigenous viewpoint."

89. In the conclusions and recommendations of the Meeting of Experts to review the experience of countries in the operation of schemes of internal self-government for indigenous peoples, held at Nuuk, Greenland, in 1991, it is stated that:

"6. The autonomy and self-government of indigenous peoples are beneficial to the protection of the natural environment and the maintenance of ecological balance which helps to ensure sustainable development."

90. The preliminary report for the study on human rights and the environment by the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities states:

"25. Most relevant for the purposes of the study is the fact that indigenous peoples have a special relationship with the land and the environment in which they live. In nearly all indigenous cultures, the land is revered; 'Mother Earth' is the core of their culture ... Furthermore, indigenous peoples have, over a long period of time, developed successful systems of land use and resource management. These systems, including nomadic pastoralism, shifting cultivation, various forms of agro-forestry, terrace agriculture, hunting, herding and fishing, were for a long time considered inefficient, unproductive and primitive. However, as world opinion grows more conscious of the environment and particularly of the damage being done to fragile habitats, there has been a corresponding interest in indigenous land-use practices. The notion of sustainability is the essence of both indigenous economies and their cultures." 42/

VI. TRADITIONAL PHILOSOPHY, PRACTICES AND TECHNOLOGIES

91. Indigenous philosophies can be taken to be the ideas, thinking and religious practices on which is based the indigenous person's relationship with the land and nature. It is this relationship with "Mother Earth" and, generally speaking, with the natural environment, which is the point of divergence with non-indigenous societies and with the development models and options which have been imposed on them. According to the indigenous view, man is part of the land and a child of the land and all that the land contains is sacred.

A. The concept of the land

92. For indigenous peoples the land is a sacred, economic, social and cultural space in which human society lives, reproduces and on which it is projected in cultural and material terms. It is the space where the ancestors are buried, where the gods and spirits live and in which their myths and legends are rooted. 43/

93. It has also been said that:

> "197. For such peoples, the land is not merely a possession and a means of production. The entire relationship between the spiritual life of indigenous peoples and Mother Earth, and their land, has a great many deep-seated implications. Their land is not a commodity which can be acquired, but a material element to be enjoyed freely." 44/

94. In 1885 the Government of the United States of America "requested" the Duwamish people to give up land to the white settlers in exchange for which they would receive - as a "gift" from the Government - a reservation. Great Chief Seattle answered on behalf of his people:

> "My people venerate each corner of this land, each shining pine needle, each sandy beach, each wreath of mist in the dark woods, each glade, each humming insect; in the thought and practice of my people, all these things are sacred. The sap rising in the tree carries the memory of the red man ...
>
> "Our dead never forget this marvellous land because it is the mother of the red man. We are part of the land and it is part of us. The sweet-smelling flowers are our sisters; the deer, the horse and the great eagle are our brothers ...
>
> "The rocky heights, the lush prairies, the body heat of the pony - and of man - all are part of the same family ...
>
> "The sparkling water which runs in the gullies and in the rivers is not only water but also the blood of our ancestors ...".

95. The "brotherhood" between man and nature can also be found among other peoples, for example, the Navajos, whose members "consider themselves to be 'great classifiers' and divide living beings into two categories according to whether or not they can speak. Beings without speech include animals and plants." 45/

96. The sacred nature of the land can often be found in African cultures; one researcher has written that land is no ordinary commodity. It occupies a special place in a number of local pantheons. It is not considered in its purely material aspect; for many West African societies it accounts for less than what it suggests to man. Rather than a source of wealth, it is a source of life. This special place of the land in traditional beliefs has been confirmed by the importance of agricultural rites. It (the land) is lent to man but is not subject to him ... 46/

97. Given the sacred nature of the land, it is easier to understand the statement made by an indigenous organization at the forty-eighth session of the United Nations Commission on Human Rights. Referring to the environment and human rights it said:

"Our concern is the same as that expressed by Chief Seattle in 1855 with regard to the earth, mankind and the environment, since ancestral lands, territories and sacred sites continue to be invaded or coveted for use as dumps for industrial, chemical and radioactive wastes." ... "Our organization has counted more than 30 bids by enterprises and companies which intend to use the land of Indian reservations in the United States as industrial, chemical or radioactive dumps. In the Amazonian forest, gold-prospectors continue to infiltrate Indian territories and to use mercury and other toxic substances to wash the gold, thus contaminating the rivers and seriously threatening plant, animal and human life. The phenomenon had also appeared in recent years on the southern border of Panama where gold-prospectors have infiltrated the territory of the Kunas." 47/

B. The right of land ownership

98. The right of ownership is guaranteed in a number of international instruments. International Labour Organisation Convention No. 169 in articles 13 to 19 included provisions concerning the land of indigenous peoples.

99. Article 13.1 states that "... Governments shall respect the special importance for the cultures and spiritual values of the peoples concerned of their relationship with the land or territories, or both as applicable, which they occupy or otherwise use, and in particular the collective aspects of this relationship."

100. Article 14 provides for the recognition of the right of ownership and possession of lands traditionally occupied and recommends adequate legal procedures be established to resolve land claims.

101. Article 15 guarantees the protection of natural resources and the right of indigenous peoples to participate in the use, management and conservation of these resources. It also establishes procedures for consultation in the exploration or exploitation of such resources and in the benefits from them.

102. Article 16 prohibits the relocation of peoples; when it is considered necessary, indigenous peoples must be notified and give their free and informed consent. It also establishes the right to return to their traditional lands when conditions permit; when such return is not possible they must be provided with lands of quality and legal status at least equal to that of the lands previously occupied by them. It further provides for full compensation for any loss or injury occasioned by the relocation.

103. Article 17 provides for respect for traditions as regards inheritance of land. The machinery for consultation in the event of the alienation of their land from the community is specified. The third paragraph of the article states that: "Persons not belonging to these peoples shall be prevented from taking advantage of their customs or of lack of understanding of the laws on the part of their members to secure the ownership, possession or use of land belonging to them."

104. Article 18 specifies that "Adequate penalties shall be established by law for unauthorized intrusion upon, or use of, the lands of the peoples concerned, and Governments shall take measures to prevent such offences".

105. Article 19 lays down that agrarian programmes shall secure to indigenous peoples "treatment equivalent to that accorded to other sectors with regard to: (a) the provision of more land for these peoples when they have not the area necessary for providing the essentials of a normal existence, or for any possible increase in their numbers; (b) the provision of the means required to promote the development of the lands which these peoples already possess".

106. The draft declaration being prepared by the Working Group on Indigenous Populations states in connection with land:

> "14 (operative) Indigenous peoples have the right to maintain their distinctive and profound relationship with their lands, territories and resources, which included the total environment of the land, waters, air and sea, which they have traditionally occupied or otherwise used.
>
> "15 (operative) Indigenous peoples have the collective and individual right to own, control and use the lands and territories they have traditionally occupied or otherwise used. This includes the right to the full recognition of their own laws and customs, land-tenure systems and institutions for the management of resources, and the right to effective State measures to prevent any interference with or encroachment upon these rights.
>
> "16 (operative) Indigenous peoples have the right to the restitution or, to the extent this is not possible, to just and fair compensation for lands and territories which have been confiscated, occupied, used or damaged without their free and informed consent. Unless otherwise freely agreed upon by the peoples concerned, compensation shall preferably take the form of lands and territories of quality, quantity and legal status at least equal to those which were lost."

107. It is important to note that both article 13 of ILO Convention No. 169 and article 14 of the draft declaration which the Working Group on Indigenous Populations is preparing state the importance for indigenous peoples of their relationship with the land because it is in this sacred relationship and the concept of ownership that is to be found the major difference between these peoples and non-indigenous cultures.

108. For indigenous cultures the private ownership of land is unimaginable, or rather, land ownership is simply unthinkable. An African author already quoted says:

> "land (in black Africa) is regarded as a divinity. It belongs to itself and as a result belongs to no one. Because of its nature, it cannot really even be given; nor can it be taken because, as a Côte d'Ivoire proverb says, 'It is not man who possesses the land, it is the land which possesses man'." 48/

109. Great Chief Seattle for his part, in his reply already quoted asked:

> "How can heaven or the heat of the Earth be bought or sold? This way of thinking is alien to us. If we do not possess the freshness of the air nor the reflection of water how can you buy them from us? ... The Earth is our mother. The evils which affect the Earth also affect the sons of the Earth. If men spit on the Earth, they are spitting on themselves. This we know: the Earth does not belong to men, men belong to the Earth ... How can a man own his mother? ..."

110. The concept of fairness between generations which has emerged in recent years as one of the major inventions for managing and conserving the planet has long existed in indigenous philosophies. In 1912, a traditional Nigerian chief declared to the West African Land Committee that "from my point of view, the land belongs to a great family, many of whose members are already dead, some are living and most are still unborn." 49/

111. An African Ashanti chief during the colonial period said: "The land belongs to the ancestors and they will ask for accounts when I go to join them". 50/ In 1895 another traditional African chief said: "If our fathers had not kept the land of Siné for us, we would not have the means of growing our crops and we would have had to abandon our country. We must pass it on to our children ...". 51/

C. A legal and philosophical conflict?

112. Great Chief Seattle said that the white man "treats his mother, the Earth, and his brother, the sky, as objects to be bought or stolen, to be sold like sheep or bright beads. His hunger will devour the Earth and will leave only a desert ... If we sell our lands, you should know that they are sacred and you must teach your children that they are sacred ...".

113. This philosophy and relationship with the land - to our way of seeing it - leads to a legal conflict between the Western concept of private ownership taken as the right to enjoy and dispose absolutely of a commodity and the collective and sacred concept of land ownership. Western ownership seen in abstract terms is ownership = usus + fructus + abusus; the "usus" and the "fructus" form usufruct and both an ultimate allocation and alienability are required in order to constitute the third aspect of "abusus"; it is true that abusus in Roman law cannot be directly translated as "abuse" but it is equally true that the "sacrosanct" private ownership of land or other assets can lead to abuse. Owing to the special nature of the land, the indigenous philosophical concept does not comprise abuse or the possibility of disposing of it absolutely, but rather its sacred aspect implies an attitude of respect and its conservation for future generations.

D. Other dimensions of indigenous philosphy

114. Many peoples and cultures have an intimate relationship with nature and particularly with the environment in which they live and/or the products which are their main source of sustenance. For example, there are the peoples who have developed life-styles adapted to the ecosystem of the wet tropical forest. These include the pygmies of whom "there are approximately 200,000

today in Cameroon, Gabon and the Congo Basin ... In a territory with a surface area of approximately 180 square kilometres lives a pygmy group. They hunt with bows, lances and nets made of liana fibres ... On rare occasions, perhaps twice in the life of a hunter, an elephant must lay down its life for the pygmy community. But neighbouring pygmies will be told so as to ensure that not the smallest piece of the animal is wasted. Before vanishing into the depths of the jungle to follow the animals, the hunters never fail to prostrate themselves ... Pygmies do not kill more animals than they need to." 52/ The irrational exploitation of the forest where the pygmies have been living for thousands of years is threatening their physical and cultural existence.

115. A number of legends reveal aspects of the conservation of nature in general or of its flora and fauna. A legend of the Sami, a people in the north of the Scandinavian peninsula tells that "the reindeer, took pity on hungry men, and suggested that they should kill him. Since then, people had hunted reindeer, and had not wanted for food. But the legend goes on to say that the sacred reindeer, Myandash, warned men to spare the females and the leaders of the herds in autumn; otherwise the hunting of the wild deer would stop. By controlling their hunting the ... (Sami) saved these animals from thoughtless extinction, in so doing providing for their own future". 53/

116. The Lamet slash-and-burn rice cultivators of Laos believe that the rice has a soul. "The rice soul is especially important at harvest-time. The cutting proceeds in such a way that the rice soul does not escape but is sent away to the corner of the field. It flies from field to field, finally arriving at a sacred field near the hut. This sacred field is sown before the other fields and harvested after them. In the sacred field, however, the rice stalk is gently cut and bundled in sheaves which contain the rice soul. From these sheaves the unhulled rice is taken. It is then used to sow the sacred field the following year. If the rice soul escapes, then the rice will not bear fruit." 54/ This means that there is always a reserve of good seed in case of need.

117. The products of the Earth are also sacred for other peoples. For example, "among the Muong people of Viet Nam, rice is given to the ancestors as well as to honoured spirits at the time of the New Year festival (Tet). Afterwards, the rice is not only eaten but is also offered to the rice itself. Thus the rice becomes doubly sacred." 55/

118. The Punan people of Borneo believe that the forest in its entirety is sacred and "even forbid the felling of trees. They also live with the spirits of the forest which inhabit living beings and speak to them through the voice of the thunder ... The Dyaks, (also from Borneo) plant varieties of wild rice in areas, no bigger than a hectare, where the trees have been cut down, which they then abandon after a number of years." 56/ The relationship and philosophy of these people have enabled them to live in harmony with their forests for thousands of years, but today their physical and cultural survival is threatened as a result of the irrational exploitation of the forest.

VII. SOME TRADITIONAL TECHNOLOGIES AND PRACTICES

119. In this section we shall look at traditional technologies and practices and the methods used by indigenous peoples from time immemorial to work, construct, exploit or use the resources of the land. Indigenous peoples have made important contributions to the progress of mankind and have shown their ingenuity and creativity at every level.

120. The terraced and other forms of agriculture developed by the Inca Empire are an example of the use made of different ecosystems. In Indonesia we find rice-growing terraces which have been in use for thousands of years. The construction of terraces requires a thorough knowledge of the ecosystem, architecture and hydraulic principles. The Inca Empire practised a distribution of production in conformity with the different ecosystems both for crop-growing and stock-raising.

121. Mention must also be made of contributions by indigenous peoples to plant acclimatization and selection; crops originating in the American continent gave rise through selection and scientific cultivation, to maize (today the second world cereal after rice), potatoes and tomatoes among others. It should also be pointed out that large-scale research has been carried out among some indigenous peoples to determine possibilities of using their medicinal knowledge of plants and other products in Western medicine.

122. Other traditional techniques and know-how are beginning to be recognized as important contributions to agriculture. For example, for centuries Azolla has been used in the Vietnamese paddy fields as "green manure" for winter rice ... . "The cultivation of rice is closely linked with that of Azolla, a water fern, which in association with the blue-green alga Anabaena azollae has the ability to fix nitrogen from the atmosphere. Nitrogen is a key factor in increasing the yield of rice obtainable from a given area of cultivated land." 57/

123. Mention must also be made of the chinampa system of exploitation and cultivation; this method was known before the Conquest and is still used by indigenous peoples in Mexico. "The system consists of creating small plots of land on which crops can be grown from plant materials and mud dredged up from the bottom of swamps and lakes, the plots being separated from each other by water channels in which fish can be raised. The word chinampa means "net of branches" and it was probably on nets of branches and leaves that the early cultivators first built their chinampa fields. A diversity of crops can be grown on these small "artificial" plots and production is unusually high and predictable ...". 58/ UNESCO with its MAB project and Mexican scientists who have studied and experimented with the system along with indigenous communities assert that it is an "ecologically sound" method.

VIII. ECOLOGY

124. Ecology, which has appeared in recent years as an "innovation" in the deliberations on the utilization of our planet and our relationship with it, is a concern which can be found in the philosophy and religious sentiment of indigenous peoples.

125. According to Western ideas, ecology has been emerging as a science which takes in nearly all scientific disciplines. "The word ecology itself (from the Greek word oikos, meaning home, habitat) was coined in 1869 by the German scientist Ernst Haeckel, who used it to define the science which studies the relationship between an organism and its environment". 59/

126. Ecology, like all science, has evolved and "The mid-1920s saw the meaning extended to cover the study of communities of species and such notions as 'the food chain' and 'the pyramid of numbers'. By 1950 scientists had developed the notion of the 'ecosystem' as a unit of study involving all the interactions between the physical environment and the species living in it. The next step was the recognition, in the 1970s, that the most critical areas for study were the interfaces or zones where different ecosystems meet and that these ecosystems together make up a whole which we call the biosphere. The final development, which has become one of the cornerstones of UNESCO's Man and the Biosphere (MAB) Programme, has been the recognition of man's dominant role within the biosphere ...". 60/

IX. BY WAY OF PROVISIONAL CONCLUSION

127. It is not our intention to draw a conclusion in these introductory notes; however philosophy, the idea of the Earth and of nature, and the technical and practical expertise of the indigenous peoples lead us to conclude that it is these societies that are best suited to sustaining a relationship of respect with "Mother Earth" and with all of nature. Our discussions during the Seminar will provide us, we are certain, with other means of confirming what we have endeavoured to demonstrate.

Notes

* Unofficial version - original not available.

1/ International Labour Office, Indigenous People. Living and Working Conditions of Aboriginal Populations in Independent Countries (Geneva, 1953), 700 pp.

2/ Hernán Santa Cruz, Racial Discrimination (United Nations publication, Sales No. E.71.XIV.2) (New York, 1971).

3/ E/CN.4/Sub.2/L.566, p. 11.

4/ José Martinez Cobo, Study of the Problem of Discrimination against Indigenous Populations, vol. V, Conclusions, proposals and recommendations (United Nations publication, Sales No. E.86.XIV.3) (New York, 1987), para. 367.

5/ Ibid., para. 378.

6/ Ibid., para. 379-380

7/ Ibid., para. 381.

8/ Mario Ibarra, "Poblaciones indigenas: ¿Cuál desarrollo?", in Cuadernos de derechos humanos, vol. III, No. 1 (ISMUN-FUMEC, December 1987), p. 30.

9/ Ibid.

10/ United Nations Action in the Field of Human Rights, United Nations publication, New York, 1992, p. 301.

11/ Report of the Working Group on Indigenous Populations on its ninth session (E/CN.4/Sub.2/1991/40/Rev.1), p. 30.

12/ Two conferences organized by NGOs: the International NGO Conference on Discrimination against Indigenous Populations in the Americas, Geneva, 20-23 September 1977 and the International NGO Conference on Indigenous Peoples and Land, Geneva, 15-18 September 1981.

13/ Mario Ibarra, op. cit., pp. 34 to 35.

14/ Statement by the International Indian Treaty Council at the forty-eighth session of the United Nations Commission on Human Rights, 14 February 1992.

15/ Peter Adamson, "Development: a design for the '80s", in UNICEF News, No. 105/1980/3, pp. 27-29.

16/ Peter Gall, "What Really Matters: Human Development"* in World Development Magazine, (UNDP, June 1990), p. 6.

17/ Lois Jensen, "Charting a Future Course"* in World Development Magazine, (UNDP, October 1990), pp. 5 to 9.

18/ The Realization of the Right to Development, Global Consultation on the Right to Development as a Human Right, report by the Secretary-General, United Nations publication, New York, 1991 (HR/PUB/91/2), p. 33.

19/ E/CN.4/Sub.2/1991/8, report prepared by Mrs. Fatma Zohra Ksentini, p. 8.

20/ Howard Brabyn, "Biosphere reserves: a global laboratory", UNESCO Sources, No. 31, November 1991, p. 7.

21/ Ibid.

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23/ Ibid.

24/ Maurice F. Strong, "From Stockholm to Rio: Journey through a generation"*, background paper on the United Nations Conference on the Human Environment and Development, p. 18.

25/ Children and the Environment - The State of the Environment 1990, UNICEF-UNEP publication, p. 3.

26/ Maurice F. Strong, op. cit., p. 19.

27/ "El desarrollo sustentable: transformación productiva, equidad y medio ambiente", ECLAC publication, Santiago, Chile, 1991, p. 9.

28/ Ibid., p. 10.

29/ On the subject of self-determination in general, see The Right to Self-determination: Implementation of United Nations Resolutions, Study prepared by Mr. Héctor Gros Espiell, (United Nations publication, Sales No. E.79.XIV.5) (New York, 1979).

30/ United Nations seminar on recourse procedures and other forms of protection available to victims of racial discrimination and activities to be undertaken at the national and regional levels, Managua, Nicaragua, 14-21 December 1981, United Nations document ST/HR/SER.A/11, New York, 1982, p. 11.

31/ Ibid., p. 13.

32/ José Martínez Cobo, op. cit., p. 42.

33/ "Ambito y ejercicio eficaz de la autonomía interna y el autogobierno", document HR/NUUK/1991/SEM.1/BP.3, prepared by Mr. Augusto Willemsen Díaz, p. 7.

34/ The conclusions and recommendations may be consulted in the report of the Meeting of Experts to review the experience of countries in the operation of schemes of internal self-government for indigenous peoples (E/CN.4/1992/42). For the background material, see document E/CN.4/1992/42/Add.1.

35/ The draft declaration is contained in the document mentioned in footnote reference 11.

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38/ Sylvie Faucheux and Jean François Noel, op. cit., p. 10.

39/ Peuples des forêts tropicales, WWF publication, Panda, III/82, p. 4.

40/ World Development, UNPD, April 1991.

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43/ We developed this idea in "Poblaciones Indígenas: ¿Cuál desarrollo?" already quoted.

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46/ Guy Adjété Kouassigan, L'homme et la terre, Office de la Recherche Scientifique et Technique Outre Mer, Editions Berger-Levrault, Paris, France, 1966, p. 11.

47/ See note 14.

48/ Guy Adjété Kouassigan, op. cit., p. 93.

49/ Ibid., p. 93.

50/ Ibid. ant., p. 67.

51/ Ibid. ant., p. 92.

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54/ Obayashi Taryo, "Rice in myth and legend", in UNESCO Courier, December 1984, p. 9.

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56/ Peuples des ..., op. cit., p. 17.

57/ Dao The Tuan, "Green winters on the Red River", in UNESCO Courier, December 1984, p. 23.

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PRACTICES OF INDEGENOUS PEOPLES IN THE CONSERVATION OF NATURAL RESOURCES AND REHABILITATION OF THE ENVIRONMENT

Background paper prepared by
Walter Fernandes

Introduction

1. During the last two decades two levels of awareness have been noticed concerning the natural environment in South Asia and in most other countries with a substantial indigenous population. The first concerns the depletion of the natural resources. The second is the impoverishment of the indigenous populations and other communities that have traditionally depended on the natural resources around them and have kept a balance between human needs and ecological imperatives.

2. Depending on the focus of the environmentalists involved, their understanding of the causes as well as of the consequences of the depletion of these resources differs. There are those who think of the environment primarily, if not exclusively, as trees, wildlife, clean air and clean water. Another major source of preoccupation would be the ozone layer (e.g. WRI 1990). People come into the picture primarily as those who destroy the resource and from whom it should be safeguarded. These environmentalists would minimize the role of overconsumption in rich countries in the debate on global warming (e.g. Speth 1990), and of industry and the upper classes in rich and in poor countries in the depletion of the forests and the other resources in the third world (for more on this, see Agarwal and Narain, 1991). They would state that:

> "While commercial logging does remove the best trees, the greatest harm to the forests is caused by the practice of shifting agriculture. This practice annually destroys 10 million hectares of high forest and causes a steady decline in the fertility of the land... In the past the soil's fertility returned to abandoned areas over a period of 25 to 30 years, as a result of natural processes. But as population pressures increased, the cultivators returned to their abandoned sites much sooner, and the period of natural bush fallow was progressively shortened." (Spurgeon, 1980: 11)

3. At the other extreme are those who focus only on the indigenous peoples and other traditional communities and absolve them of all responsibility for the depletion of these resources and would even go to the extent of stating that merely handing the forests back to these communities will lead to their regeneration. Some of them would suggest that the Government declare an "immediate moratorium on all forest cutting" as a sign of its good will. It will "mean a temporary loss to the State exchequer but it is negligible compared to the loss caused by the deforestation". Industry will "develop substitutes" (Prabhu 1983: 140-141).

Note: The opinions expressed in this paper are those of the author.

4. A third category would take a middle position. They are aware that in the past the indigenous peoples had a tradition of keeping a balance between human needs and those of the environment around them. This balance has been weakened. The consequent depletion of forests has resulted in the impoverishment of the communities that have traditionally depended on them. They would ask why

> "populations who for millennia persisted in a state of almost complete self-sufficiency, having developed their own way of life and cultural individuality without any need for outside assistance, have now to be protected and aided by governments? This question appears to be all the more pertinent as only one or two generations ago many tribal communities enjoyed the advantages of a well balanced ecology fully in tune with the natural resources of their environment, and could boast an overall quality of life superior in many ways to that of large sections of the Indian rural population. Adequate food supplies, a non-exploitative social structure, freedom from indebtedness and other forms of dependence on non-tribal outsiders, equality of the sexes and a remarkable tolerance in all interpersonal relations were outstanding characteristics of such tribal societies." (Haimendorf, 1980: 1-2)

5. Studies confirm this impoverishment not merely in India but in other continents too. Speaking about the native peoples of Canada, for example, Comeau and Santin (1990: 2) say:

> "Native Canadians die, on average, ten years sooner than other Canadians ... They are barely better educated today than they were two decades ago. They are jailed at rates that far exceed their numbers ... And they destroy themselves at a phenomenal rate, through violence, accidents, and by choosing suicide as a way out of their misery ... But it has not always been this way. Long before the white settlers came, Canada's aboriginal people had created a cooperative social structure, complete with a hierarchy of political power and a fully functioning justice system."

6. These analysts are aware that the indigenous peoples and other communities that depended on the natural resources had developed a culture and a tradition that ensured their sustainable use. However, this culture, which satisfied the basic human needs of everybody without destroying the natural resources, has been weakened by external intervention. With this, there has been a transition from constructive to destructive dependence on these resources. This transition itself has been caused by industrial clearfelling, by displacement of the local communities for development projects and by other modes of transfer of these resources to the corporate sector. In other words, the resources which were the life support system began to be destroyed to satisfy the consumption needs of the dominant classes outside the region. This deprived the indigenous communities of their livelihood and began the vicious circle of their impoverishment, indebtedness, land alienation and transition to destructive dependence on the same resources for their survival (Fernandes, Menon and Viegas 1988: 224-233). The analysts who take this position would, therefore, conclude that for any sustainable development to be feasible, the causes of this vicious circle have to be analysed and the process reversed. The major cause would be overconsumption of these resources by a few.

"A world in which poverty and inequity are endemic will always be prone to ecological and other crises. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life.

"Living standards that go beyond the minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability. Yet many of us live beyond the world's ecological means, for instance in our patterns of energy use." (WCED, 1987: 43-44)

7. These are the aspects we shall study in the present paper. After an initial discussion on the extent of the dependence of the tribal and other indigenous peoples on the forests and other natural resources, we shall analyse their culture and traditions. We shall then look at the causes of the deterioration of these resources and of the vicious circle that ensures their further destruction. We shall end the paper with some suggestions for sustainable development from the perspective of the indigenous populations.

I. CONTROL OF RESOURCES

8. It is thus to be noted that a major source of the marginalization of the indigenous population is the struggle for the control of the natural resources in which the regions inhabited by them abound. Modern development is based on industrialization, i.e. exploitation of these resources in order to render them productive in the formal economic sense. This is true not merely of the rich countries that overconsume the resources, but also of poor countries of the third world whose development has been stunted by a century of colonialism. In their belated effort to free themselves from poverty, these countries view industrialization as:

"... a means not an end. But considering the need for initiating the process of sustained and more rapid progress in subsequent plans, it becomes almost an objective in itself." (Planning Commission 1955: para. 16)

9. The natural resources are a crucial component in what was considered by the planners the road towards progress of every community in the country. India's decision-makers, for example, say:

"Because of its natural resources, India has very important advantages and considerable potential for industrialization. Its known reserves of iron, manganese, bauxite are extensive. There is considerable coal, mica and atomic materials such as thorium ores ... India's famous rivers have a potential for hydro-electrical power." (Planning Commission, 1961: 10)

10. A contradiction thus arises between the approach of national development based on industrialization and the interests of the weaker sections, particularly the indigenous peoples, in whose area most of these resources are found. Their life is destabilized in order to render the resources productive. In many cases the decision-makers themselves are aware of this tension between productivity and equity. In India, for example, the very first plan document stated that redistribution alone could not eliminate poverty nor could raising productivity by itself achieve it.

> "Only a simultaneous advance along both these lines can create conditions in which the community can put forth its best efforts for promoting development." (Planning Commission, 1951: 8)

11. Similarly, the Asian Development Bank-sponsored plan for South-East Asia mentions such a contradiction (Myint, 1972). But, by and large, focus has been on productivity and, in the process, equity has suffered. The consequent impoverishment of the weaker sections, particularly the indigenous populations living in the resource-rich regions, has further intensified the process of environmental degradation initiated by productivity-oriented industrialization and overconsumption by the upper classes. The causes of this process have to be identified if a new process of sustainable development is to be initiated. We shall allude to these causes after analysing the tribal tradition of sustainable development.

II. FORMAL VERSUS INFORMAL ECONOMY

12. The first reason for this contradiction that looks inevitable seems to be the fact that the present form of development is a transition from the informal to the formal economy. They are two systems with different foundations. The informal economy and political organization on which most indigenous peoples depended traditionally is based on an oral tradition and word of honour. The member of an informal society keeps the word of honour, trusting others to do the same. Truth in this system is unambiguous, not evidential as in the formal system. The economic base is the resource which is controlled by the community. It is used by individuals and families in the name of the community, according to need, and is preserved for posterity. Acceptance by the community is the basis of legitimacy in this system.

13. The formal society in general and the formal economy in particular, depend on the individual and the written word. This difference is probably best understood by looking at a social system like marriage. Among many tribes, as soon as a boy and a girl exchange a promise they are allowed to live together; the formal ceremony of marriage may come much later. What is required is recognition by the community. The second step is seen in Hindu, Muslim and other marriages, where merely the word of honour of two persons is insufficient. The boy and the girl are not allowed to live together till a formal marriage ceremony is performed in the presence of the community. But a written document is not essential. The third step is the formal system of civil and other forms of marriages, particularly in the western tradition, in which there has to be an individual witness as well as a written document. The witness and legitimation of the community are of no avail to it. Only individuals and written material are recognized (Sharma, 1978: 13-14).

14. The difference between these two economies is crucial for resource management. The concept of property as understood today was absent in the traditional tribal societies. Land, for example, is today understood primarily or even exclusively as an object of agriculture and construction, and the individual owning it has an absolute right over it. To the tribal whose life was centred primarily around land and forests, it was not property in that sense but a community resource. The descendants of those who first cleared the forests and founded a village had some special rights. Otherwise land and other resources were held by individuals only in the name of the

community. Common lands, wastelands, forests, ponds, gardens etc. were a common property resource. The individual had only usufructuary rights over it (Pathy, 1988: 84-85).

15. One should add, however, that community ownership is not just specific to the indigenous populations. It has existed among many other groups too, in all the continents. By the Middle Ages, the concept of common forest resources was well developed in England, with the lord of the manor owning the forest and the populations around having a right to use it (Rackham, 1986: 121). Strong and legally recognized community institutions for forest management existed also in the Swiss Alps, with a "power-holder" appointed to administer the community resource (Netting, 1981: 68-69). Similarly water management institutions existed in Spain, in the Philippines and in most of India to ensure equitable supply of irrigation to all the farmers (Sen Gupta, 1990: 38-80). All these were modes of equitable distribution. Specific to the indigenous populations is the extent of their direct dependence on the natural resources and the culture they developed around these resources to ensure not merely the equitable distribution but also the conservation and renewability of the resource itself.

16. We shall now attempt to understand the extent of this dependence and the indigenous traditions. Any sustainable development would have to be based on the principles around which these traditions were built, though the form would have to be adapted to modern needs. The reason for this is another basic difference between the informal and formal economies. The former is a self-contained subsistence economy and by and large local in character. Control over resources is in the hands of the community that depends on them directly and almost totally for its livelihood. As such, sustainable use of the resource is not merely possible but also inevitable (Izikowitz, 1951: 46).

17. On the other hand, the present type of industry and commerce based formal economy is geared to the needs of a consumer society. The natural resources are no more its very subsistence as in the case of the informal economy, but are only a raw material to be transformed and consumed as a finished product. These resources are a source of profit for the industrial owner. The consumer, who lives far away from the resource-producing region, has neither control over the resource nor a vested interest in its sustainable use. The commercial-industrial forces, to which it is only a source of profit, take control of the resource but do not have a vested interest in its conservation. They can switch over from one product to another according to availability and profitability. Thus both the consumer's need for more finished products and the industrialist's profit orientation ensure overconsumption and the consequent deterioration of the natural resources, i.e. environmental degradation (Shiva and Bandopadhyay, 1981: 115-117).

III. EXTENT OF DEPENDENCE

18. Given that theirs was a sustenance economy, the dependence of the indigenous peoples on the environment around them was almost total. To begin with, 80 per cent of their food came from the forest, some authors state. It may be true in areas where forests have not been destroyed. In the areas we studied, industrial clearfelling has resulted in deforestation, but the dependence of the forest dwellers, 70 per cent of them tribals, on this

resource continues to be great. Around 50 per cent of their food comes from the forest, despite deforestation in recent years (Fernandes, Menon and Viegas, 1988: 105-125). This dependence was seen first of all in swidden cultivation. Secondly, it could be noticed in non-wood forest produce. Because of this dependence, a balanced use of the resource was ensured through their forest management traditions.

IV. SWIDDEN CULTIVATION

19. One major source of their food is swidden cultivation, known also as jhum, shifting or bogodo cultivation. Not all indigenous populations practise it. But most of those practising it are from this category. In India, for example, it is estimated that around 25 per cent of the country's 70 million tribals are shifting cultivators (Reddy, 1983: 154) and they form nearly 90 per cent of all the shifting cultivators. In Thailand, Viet Nam and Laos, it is practised primarily by the tribals who, according to some constitutional experts (e.g. Ratanakhon, 1978: 50-51), are not indigenous but are different from the mainstream population. These tribals form the majority among those who practise shifting cultivation in these countries (Kunstadter and Chapman, 1978: 13-16). But some plains people also practise it, particularly in Thailand (Komkris, 1978: 61).

20. Shifting cultivation is considered by many to be an entirely destructive practice. Some think that it is linked only to demographic changes. Traditionally the technology of these cultivators protected the forests. But "population pressure" is now threatening their economic system by "forcing them to shorten the length of the fallow period in their upland fields" (Kunstadter, 1978: 74).

21. We agree with these analysts that today, in most forest regions, shifting cultivation has become destructive. This is mainly because of the shortening of the fallow period, which is now between 6 and 12 years (Fernandes, Menon and Viegas, 1988: 77-83), whereas most acknowledge that with an 18-20 year fallow period shifting cultivation is a better practice for the slopes from an environmental point of view than terrace cultivation (Gangwar and Ramakrishnan, 1987: 13). While acknowledging its destructive role, we disagree with those who attribute it only to population pressure, which is certainly one of the factors, but not the only one and probably not the most important one. The encounter between the formal and informal economies, as well as the role of overconsumption, would have to be studied and we shall do it at a later stage.

22. As far as sustainable development is concerned, swidden cultivation, more than any other indigenous practice, represents the four main principles on which traditional forest management systems are based. Firstly, because land, water, forests, etc. were community-based and not individual property, and because of social control mechanisms going with community ownership, the society developed a culture of equitable distribution of the resource. Secondly, swidden cultivation kept an ecological balance. Thirdly, because of division of labour around the resource, women in these communities, while not being equal to men, had a higher status than their counterparts in mainstream societies. Finally, a balanced diet was ensured.

A. Equitable distribution

23. The immediate consequence of having a community resource that sustained the community (not merely according to what is called economic utility), was its equitable distribution. The method of ensuring equity differed. Among the Tripura tribals in India, for example, the elders chose the day for the ker puja before which no shifting cultivation operation could begin. The community leaders fixed the area each family could cultivate according to the number of workers and mouths to feed. The man of the family chose the plot after certain rituals, and cultivated it for a year. The plot was left fallow for five years to allow bamboo to grow again. The family did not necessarily select the same plot when it became available for cultivation five years later (Mishra, 1976: 69-76). The pattern was similar for most other tribals including the matrilineal ones (Das, 1986: 46).

24. Another mode of ensuring equitable distribution was sharing in the work of cultivation. The choice of the plot was based on the number of workers in the family and on the needs of all the individuals. This combination was essential to ensure that no one in need was deprived of the resource and that the stronger did not control more. Those families that did not have enough adult workers had to be helped by the rest of the community to complete the work in the fields (Fernandes and Menon, 1987: 60-70).

25. Several tribes went beyond merely helping a needy family to cultivate its plot. Cultivation itself was turned into a communal action. One can mention among them the Lotha Nagas in north-eastern India and the Lamet of northern Laos. Among the former, swidden cultivation was a common operation of the whole village, though everyone knew what area belonged to whom. After the harvest, the villagers filled the barns together. The latter cultivated swidden plots together and preserved the grain in a common barn (Izikowitz 1951: 41-44).

B. Environmental balance

26. The second major feature of shifting cultivation was its environmentally balanced approach. It was practised only on less than 20 degree slopes since such cultivation is not safe above this gradient. The plots were selected in such a way as to combine medium and gentle slopes. The pre-monsoon crops were grown on medium slopes so as to ensure a good coverage of roots above the soil before the rains. The gentle slopes were used after that (Roy Burman, 1988).

27. The technology used differed from area to area depending on its ecology. The day for beginning cultivation was fixed for the whole village. Many tribes allowed only branches and undergrowth to be used as fertilizer. Any deviation from commonly accepted norms met with the same sanction as the overexploitation of timber or other forest produce. The main criterion was the renewability of the forest which was the life support system. No technique that could cause soil erosion or long-term deforestation was allowed.

28. Linked to the technology was the 18-to-20 year cycle in most areas. The Lamet of Laos, who used mixed bamboo forest, had a 12-year cycle (Izikowitz, 1951: 206). In Tripura and elsewhere where bamboo forests were cultivated, there was a five-year cycle. Studies have shown that this is the fallow

period required for the forest to be treated as renewable. The burning of branches provided the tribals with the fertilizers required for cultivation, while ensuring the ongoing fertility of the soil. Hence, when after two or three years the land was left fallow, its fertility was not lost and the forest could grow again (Gangwar and Ramakrishnan, 1987).

29. Another aspect that ensured renewability was the religious connection given to it. Most tribals felt guilty about cutting trees for human use. Consequently, many of them began the shifting cultivation season with a ritual of propitiation of the forest goddess. In the Ganjam district of Orissa in India this is called bogodo puja and in Tripura it is ker. Among the Lamet of Laos it is propitiation and blessing of Si-ep-god (Izikowitz 1951: 213-215). It has other names elsewhere. What is common to all of them is that in some form or other the people tell the gods that they deserve pardon for the sin of cutting forests because they have no other alternative, and that as protectors of the people, the gods should give them a good harvest and should regenerate the forest (Fernandes, Menon and Viegas, 1988: 167).

30. Such environmental balance itself was an offshoot of the community-based informal economy. Because harmony between the human being and nature was its central principle, shifting cultivation did not have any perceptible impact on the forest resource (Sharma, 1978: 57-58).

C. Women's economy

31. Thirdly, as in the rest of the forest economy, women played a dominant role also in shifting cultivation. This is seen first of all in the amount of work men and women put into it. Our study in Orissa revealed that in most cases women work for around 180 person-days in shifting cultivation fields as against about 100 days put in by men. That in itself would not be indicative of greater control of women over shifting cultivation than they would have over settled agriculture. It can even mean more exploitation of women. Such an eventuality is prevented by the organization of work. Among most patrilinear tribes a clear distinction is kept between the social and the family sphere. The woman is completely in charge of the family economy. Her consent is essential, for example, in the children's choice of marriage partners. She has freedom of divorce and remarriage, and widow remarriage is permitted, unlike in most mainstream societies, which accord a much lower status to the woman and deny her these privileges while granting them to the man.

32. But the social sphere came under the man. He represented the family at the village council meeting. In the case of the children's marriage, for example, after the mother gave her consent, the father would have to present the decision to the community leaders and get their consent. To put it in economic terms, the man controlled the resource (which belonged to the society) and reproduction (which represented the continuity of the tribe), while the woman controlled the production that was required for the survival of the family.

33. For swidden cultivation, the organization of work was under the woman's control, unlike in settled agriculture in which the man controls every agricultural operation. In jhum it is part of production and of the family

economy. As such, decisions concerning cultivation itself are taken by women. In settled agriculture, women do most of the tedious jobs, such as planting, weeding and harvesting while men did jobs such as ploughing, cutting wood, etc., that are thought to require greater physical strength. In shifting cultivation, this basic division is maintained. However, while work requiring greater physical strength is done exclusively by men, in most cases tedious jobs such as hoeing, weeding, clearing and harvesting are shared by both men and women.

D. Balanced diet

34. The final aspect that needs to be borne in mind is that shifting cultivation ensured a balanced diet. In all probability this was because of the domination of women in this form of cultivation. Given that it was meant to be a part of the family economy, it was organized in such a way as to ensure a regular supply of food over several months. The combination of types of slopes was in view of both environmental stability and a balanced diet. Traditionally, cultivation on medium slopes began much before the heavy rains. Cereals and pulses were sown on various types of medium and gentle slopes in such a way that they could be harvested at different periods between October and February. As many as 26 varieties of cereals and pulses were thus grown in Orissa in India. The tribals of Irian Jaya in Indonesia produced rice and sago, bananas, vegetables and several tubular root crops that mature in different months (Soewardi, 1983: 131-133). In Thailand the major crops of rice and cereals were supplemented by the minor crops of maize, mustard, greens and peppers (Kunstadter, 1978: 95-96). In the Philippines, too, similar variety can be noted (Bennagen, 1983: 260-263), while in parts of Malaysia where swidden cultivators have adopted a culture close to that of settled agriculturists, the variety of crops is extremely limited and does not ensure a balanced diet (Majid, 1983: 191-194).

35. A balanced diet was further ensured by many indigenous peoples, particularly by those of Indonesia and the Philippines and by the Mongoloid tribes of north-eastern India, through the livestock that lived on the by-products of swidden cultivation. Among the Lamet of northern Laos, for example, their five varieties of rice, twelve cereals and several species of roots, maize and vegetables, were supplemented by pigs and chicken that lived on farm waste (Izikowitz, 1951: 231-247). In north-eastern India mithuns, pigs and other animals lived on agricultural and human waste in the jhum season and added protein to the diet of the tribals (Gangwar and Ramakrishnan, 1987). Besides, the multiplicity of crops itself resulted in a canopy that protected land from soil erosion (Fernandes, 1988).

V. RESTRICTIVE PRACTICES

36. Forest conservation was ensured also through restrictions on the use of economically useful species. Many of these restrictions existed also in other rural and forest dweller communities. What was specific to the tribals was greater community cohesion and an egalitarian society and, as a result, more possibility of enforcing these norms and of ensuring ecological balance. These restrictions were based on seasons, stages of life, the species and quantity. Sometimes they extended to an entire ecosystem.

A. Restrictions according to seasons

37. The first set of restrictions concerned seasons. Just as the fisherfolk banned fishing in the spawning season or the (non-tribal) forest dwellers of Tehri-Garwhal in Uttar Pradesh allowed nakhdum (a tuberous plant) to be harvested only during the annual communal festival (Gadgil and Vartak, 1974), most tribal communities forbade the cutting or hunting of totem plants or animals during most of the year. Such a total ban is noted among the Lamet of Laos, the Karen and Lao and others in South-East Asia (Izikowitz, 1951: 86-88). Among most Indian tribes the ban applied during the year but cutting or hunting was allowed on the annual day of renewal. Such was the case with the bel tree among the Anpir Konds of Ganjam and the tiger among the Konds of Kalahandi (Fernandes, Menon and Viegas, 1988: 161-162).

38. Restrictions were also placed during certain stages of life. Most tribes forbade the killing of pregnant animals. In a few cases the restriction applied to a few species, such as types of deer, while most tribes imposed a ban on the killing of any pregnant animal (Gadgil and Vartak, 1974).

B. Restriction on cutting species

39. Every tribal and other forest-dwelling group has some species which it considers essential for its survival. It takes measures to protect these species by declaring them sacred. In most tribal areas of India the tribals accord such a status to sal and mahua, and a few even to mango and jack fruit. These trees cannot be cut till they are very old and do not yield any fruit. Such customs are noticed also among the tribes of South-East Asia (Izikowitz, 1951). Common to all these trees is their very great economic utility. Total protection is therefore accorded to them by declaring them sacred and banning their destruction in any form (Fernandes, Viegas, Menon and Chandy, 1985: 124-131). Precisely because of their value, these plants, trees, creepers and animals also play an important role in the rituals and ceremonies of these groups (Deeney and Fernandes, 1992: 43-50).

40. Another set of trees (mango, jack fruit, etc.) that were economically important, but not as crucial as those in the first category, were declared sacred and accorded partial protection. They could be cut only for specific purposes, such as house construction and to make agricultural implements, and with the consent of the village council (Sachchidananda and Pathak, 1983: 63-65).

41. Finally, the species that were not accorded such protection could be cut under strict rules of conservation and distribution which was controlled by the village council. Such rules existed also for the use of other resources like water, shifting cultivation land, pasture and other common property resources (Fernandes, 1990: 38-40).

VI. PROTECTION OF ENTIRE ECOSYSTEMS

42. Apart from giving protection to individual trees, most tribals accorded total protection to entire ecosystems. In most of tribal India such protection was accorded to three systems known in the region of Bihar Chotanagpur as

the sarna, the akhara and the sasan. No sickle or axe could be used in any of these ecosystems. Only fruits and dry twigs that could be broken with one's hands were allowed to be used.

43. The sarna was a plot with several hectares of thick forest growth in which the tribal teenagers were initiated into adulthood (Gupta, Banerjee and Guleria, 1981: 9). In that sense, it symbolized the very identity of the tribe. Besides being the initiation ground, it was considered the abode of the deity and the dwelling place of the spirit of the tribe. The teenagers who were initiated into adulthood had to live on the fruits and animals available there. The akhara is the dancing ground in the forest where young men and women meet. During some of the dances, like the annual dhangara-dhangari among the Konds of Orissa, they choose their life partners (Fernandes and Menon, 1987: 116). While the akhara itself is a clearing in the forest, the ecosystem around it was considered sacred and was protected. The sasan or the burial ground was in the middle of the forest. In the absence of written documents of ownership of land and of the membership of a tribe, until the arrival of the British and the introduction of private property, the tombstone of an ancestor was the only proof required for a family to stake its claim for agricultural land in the village (de Sa, 1975: 45). The thick growth of trees and shrubs around the sasan was considered sacred. Such protection to entire ecosystems was accorded among most tribes of South-East Asia, such as the Hmong, Lamet, Luo and Karen (Keen, 1978: 212-213).

44. One can notice a clear link here between the community resource and conservation. The ecosystems that are preserved by most tribals are those that are linked to the continuity of the tribe, namely, the teenagers (the future warriors), the couple or the future parents and the ancestors. A balanced use and conservation of this resource for posterity was thus linked to the continuity, as well as the identity, of the tribe.

VII. RELIGIOUS MYTHS

45. Mere social control without divine legitimization is difficult to enforce in a traditional society. With this in view, apart from protecting some ecosystems, the tribals built myths and stories around these spots, as well as around forests and trees in general. As a result their religion is by and large centred around nature, with an abundance of spirits, gods and ghosts who dwell in trees, plants, animals, birds and rocks and have to be worshipped and kept satisfied for fear of provoking them into destroying the individual, his family or the entire village. Significantly, these beliefs are closely related to the preservation of economically important species which are linked to the origin and continuity of the tribe.

A. Myths of creation

46. Among most Indian tribals, the first series of myths is centred round the creation of the world or the origin of the tribe, attributed to some tree or animal. The totem (an animal, bird or tree) is one such example. It may not be killed except during the annual spring festival that marks renewal, when hunting parties are organized. The animal or bird thus captured by the whole village or tribe is eaten during this annual celebration to signify the common shared life of the entire community (Gupta, Banerjee and Guleria, 1981: 10-11).

47. We found many such instances among the Orissa tribals. For example, the Kond tribals of Kalahandi believe that when the world was submerged in water and all the people died except two children who survived on a hill, the salap tree gave them its juice and saved them from starvation. Their race emerged from these children (Fernandes, Menon and Viegas, 1988: 164-166). There is a lack of consistency in various myths of the Saora tribe. But common to all of them is that the creator has to have some raw material from specific trees and animals to create their ancestor. In all these myths, Kittung, the creator, is presented as a lover of trees and animals. The sago palm is the most common material mentioned. The sap of this tree is used in all their rituals and wine produced from it is an important source of protein. Other trees, such as the date and toddy palms, have similar myths surrounding them (Elwin, 1955: 85-91).

48. Unlike in India, among most tribes of South-East Asia, the totem is linked to the death of the ancestor. As such, it cannot be eaten even on the annual renewal day because it is associated not with life but with death. The Lamet of northern Laos, for example, are divided into seven totemic clans, three of them linked to animals and the rest to trees. In every case the death of the ancestor is associated with the totem. For example, the forefather of the mpol (Arctogalidea Zeucotis) saw a mpol go into a small hole in a maidu (mahogany type of) red wood tree. He wanted to eat the mpol and began to cut the tree. But a few bits of the bark flew into his eyes, made him blind and eventually killed him. Consequently, neither this animal nor the tree can be eaten by the clan (Izikowitz, 1951: 85-89).

49. In other cases the tribe establishes a family relationship with the species it wants to protect. The Baigas of eastern India, for example, cultivate the slopes where the use of a plough would result in soil erosion. They state that using a plough would be equivalent to tearing the breast of Mother Earth (Sachchidananda, 1983: 63). Many Kond clans of Orissa consider the tiger a family member. As such, it cannot be killed. If one dies, it is buried with honours due to a brother in Kalahandi district and to an uncle in Ganjam district.

B. Other forms of sacredness

50. Other myths protected trees by showing their usefulness. For example, the Didayis of Koraput district in Orissa (India) believe that when the world sank under water, the supreme being (Rumrok) made a new world, but without trees. Slowly, however, the suffering of all human beings made him realize the need for timber for housing, fuel for cooking and the shade of trees for resting. So he produced seeds from the dirt on his body, planted them and looked after them. Other trees grew from these seedlings (Fernandes, Menon and Viegas, 1988: 165-166). Similar myths concerning pigs are found among the Lua and Karen of Thailand, to whom the animal is an important supplement to their agricultural produce (Kunstadter, 1978: 101-105).

VIII. DIVINE ANGER AND SOCIAL CONTROL

51. Apart from such myths connected with creation, death, divine blessing and usefulness, the wrath of God too was an important driving force in the preservation of the resource by most indigenous peoples. The forest deity had

to be appeased and could not be angered by cutting more trees than required for basic needs. Mother Earth had to be protected. Otherwise her anger could destroy crops essential for human survival (Sachchidananda, 1983: 64-68).

52. Besides, mechanisms of equitable distribution were worked out by most tribes and the myths and traditions conferred legitimacy on the social control exercised by their leaders. We have already mentioned several of these mechanisms while discussing choice of plot, organization of work and common barns in shifting cultivation. We have also mentioned that, through myths of creation and divine blessing, trees were divided into three categories: those that cannot be cut at all, those whose timber is used for specific purposes and those that are not protected but have to be used sparingly. This was ensured by fixing the quantity of firewood each family was allowed to use, the thatch made available for houses, etc. (Fernandes, Menon and Viegas, 1988: 90-91). Protection was ensured also by banning the use of destructive technologies. Bamboos, for example were cut at a certain angle a few centimetres above the ground to ensure coppicing.

IX. ABUNDANT RESOURCES, SUSTAINABLE DEVELOPMENT

53. This situation has changed today because of external intervention. As a result, one cannot speak in terms of going back to the past. However, it is important to understand, on the one hand, the causes of this change and, on the other, the principles on which the indigenous sustainable economy was based. That would make it possible to analyse the present form of development in order to introduce into it the features of sustainability that were central to the indigenous cultures and seem to have been given up by the present pattern of development. In other words, as mentioned at the beginning of this paper, one needs to accept the principles on which sustainability is based, while adapting the form to present needs.

54. Three main features of the traditional indigenous economies stand out in their natural resource management systems analysed above. The first is that the system was organized in the context of a self-contained economy, linked to a village or a group of villages. Barter was the predominant form of exchange and only a few items involving exchange with outsiders were monetized. Such an economy was meant to meet the limited needs of the populations involved. Their forest management system, for example, was a response to their survival needs (Gilmour and Fisher, 1991: 48-49). Such an economy, based not on overconsumption but on basic needs, would be the first feature of what we would consider the indigenous peoples' concept of sustainable development. Essential to such an approach were the two aspects of an egalitarian society and a conservation-based approach of balance between human needs and ecological imperatives.

55. The second feature of their self-sustained economy was an abundance of resources. For example, "In general, shifting cultivation has taken place in areas where ample land is available ... The more forest lands available for agriculture, the stronger the drive towards swidden cultivation" (Soewardi, 1983: 120). Because of this abundance they could cultivate a plot only for a year or two and leave it fallow for 18 to 20 years. But, precisely because they maintained this cycle, the resource continued to be abundant and they could observe the traditions linked to their sustenance economy (Izikowitz, 1951: 41-47).

56. Because of this abundance and the indigenous outlook of sustainability, what they needed was not a tradition of regeneration of the resource but of its balanced use. Given their limited needs and their traditions of conservation, regeneration itself could be left to natural processes. For example, even while being totally dependent on the forest for survival, they did not have a tradition of forest plantation because, as mentioned above, their technology of cutting trees or of agriculture ensured coppicing.

57. As a result, their forest, land and other management systems can be considered "largely a matter of natural resource management". When it comes to shifting cultivation, for example "the ecology is such that no other system of cultivation can be resorted to" (Sachchidananda, 1983: 96). The same can be said of their other systems, such as those concerning the management of forests, water, livestock, etc. (Keen, 1978: 213-216). In other words, the third feature of sustainable development as practised by most indigenous populations, was the adaptation of their needs to their ecology. Given the context of their conservation-oriented, egalitarian society and a resource management system geared to meeting their basic needs, provision was made also for dealing with shortages, such as those caused by droughts, without undue damage to the environment (Fernandes, 1991: 141-144).

X. THE SITUATION TODAY

58. That all three of these features have changed today can be seen from the consequences as noticed both in the state of the material environment, particularly the natural resources, and the impoverishment of the indigenous populations. In most cases the symbiotic relationship the indigenous populations and the natural resources had developed with one another is breaking down, if it has not disappeared already. In countries like India one notices a transition from the constructive dependence on these resources that we have discussed above to destructive dependence on them. In other words, most indigenous populations continue to depend on these resources but, because of the shortages that they are experiencing, they live by destroying them instead of keeping a balance as they did traditionally.

59. Signs of this would be the shorter cycle of swidden cultivation today and the sale of firewood. In most countries swidden cultivation has come down from an 18-to-20 year cycle, which is considered healthy, to six years or even less. As a result of a shorter cycle, this form of cultivation has become a source of deforestation, since the plot is not left fallow long enough for forests to regenerate. Another sign would be the number of persons who depend on the sale of firewood for survival. It is estimated that in India alone there are over 5 million headloaders for whom the sale of firewood is their only mode of survival (Agarwal and Narain, 1985). Also, the sale of firewood has become a source of deforestation.

60. In other words, in many countries the conservation and balanced use-oriented culture of the indigenous populations had changed. In the context of the consequent shortage of resources, competition has begun for the scarce resources and, as a result, the egalitarian society that ensured that everyone's basic needs were met has broken down. This has been noticed in India (Fernandes, Viegas, Menon and Chandy, 1985: 171-172), in South-East Asia (Atal and Bennagen, 1983: xv-xvii) and among the Amerindians (Collier, 1947: 159-162).

61. Studies have indicated that while all the indigenous populations suffer the negative consequences of these changes, women are the worst hit. While the traditional division of work continues, the resources on which this division was based have been depleted. As a result the workload of women has increased, their nutrition has suffered because of the shortage of resources and their health situation has deteriorated. With upward mobility in mind many indigenous families begin to adapt to the customs of the mainstream populations that accord a lower status to women than the tribals do. Women therefo[illegible]y a higher price for modern development than the male members of their c[illegible]ities (Fernandes and Menon, 1987: 72-91).

XI. THE ENCOUNTER OF UNEQUALS

62. Basic to these changes is the intrusion of the formal economy, whose framework is totally foreign to most indigenous populations. Illiterate peoples who have traditionally depended on word of mouth have today to deal with a State and an economy based on individual rights and the written word, and a litigation-oriented legal system. In reality, this is an unequal struggle between power and powerlessness for the control of the resources on which these peoples have depended for their very survival. The resources are being transferred systematically to the powerful corporate sector, to which it is only a source of profit and a raw material to be processed into consumer products for the middle class (Sharma, 1978: 60). The indigenous peoples who have till now depended on these resources are forced into this consumer product- and profit-oriented system without any preparation to cope with a totally different framework. The result is their impoverishment and marginalization (Comeau and Santin, 1991: 69-76).

63. Crucial to the present formal system is overconsumption of the resource by a few powerful categories which deprives the weaker sections of their basic needs. This is true of the international order par excellence, but is noticed also in intranational relations. At the international level, 30 per cent of the world's population living in the northern half of the globe consumes 80 per cent of its resources and monopolizes the same proportion of its income.

64. Simultaneously, environmental movements that are born in the North ensure that forests there are protected, polluting industries are kept under control and clean water is made available. This is done without either reducing consumption in the rich countries or questioning the resource use pattern in the rest of the world. As a result, more often than not this protection takes place at the cost of the South, which continues to be only the supplier of raw material for which the rich countries have refused to accept a floor price. Polluting industries and even industrial and nuclear waste are being transferred to the poor countries, often in the name of development and foreign aid. While the forests and other resources of the North are protected, those in the South are being destroyed in order to meet the ever-growing needs of the populations of the North and to earn foreign exchange to pay the ever-increasing prices of the finished products that the poor countries have to import from the rich countries. This automatically results in diversion of land for commercial crops, deforestation and famines, as the drought in Ethiopia has illustrated. The poor countries are held responsible for the production of ozone-destroying gases by livestock and by deforestation. But both the unjust international economic order that results

in this type of deforestation and the heating of the biosphere by the overconsumption of petroleum products are ignored (Agarwal and Narain, 1991).

65. Of the remaining 20 per cent of the resources that are left over for 80 per cent of the world's population, a small minority in the poor countries monopolizes the bulk. The per capita incomes hide the inequalities; and the decision makers in the rich and in the poor countries refuse to deal with inequalities. After all, the decision makers in the rich and in the poor countries:

> "who rely on 'scientific' economics are not only academic and social élites, but power élites as well. Their power emanates from the vast inequalities that the present system tolerates and perpetuates, for they are very much part of an affluent minority. Consequently any effective step to eradicate mass poverty and to arouse the masses is a direct threat to their existence and operations" (Kurien, 1974: 6)

66. This is true at the national as well as the international levels. The effort to blame the poor countries for global warming without tackling the question of the overconsumption of natural resources is one such attempt at the international level (see, for such a stand, WRI, 1990). Such attempts are noticed in most poor countries, in most of which the indigenous peoples suffer most because it is in their regions that the exploitable resources, whose productivity is being maximized, are primarily found. With this in view the corporate sector takes control of them and deprives the local populations of their use. Deforestation is one such aspect we have discussed above. Control over land and water results in the displacement of the local populations. Since many of them do not have ownership documents as understood by the formal system, which is foreign to them, they are often displaced without proper compensation. Exact figures on displacement are not easily obtainable. But the figures that are available indicate that in India alone at least 19 million persons have been displaced for development projects in the last four decades, more than 40 per cent of them tribals who form only 7.85 per cent of the country's population (Fernandes, 1991a). Rehabilitation is negligible. It is observed also in the Americas (Brunelli, 1992) and most of South-East Asia that the indigenous populations are the worst affected by development that transfers resources to the mainstream population and displaces many of them.

XII. TOWARDS SUSTAINABLE DEVELOPMENT

67. These aspects have to be tackled for any sustainable development to be realistic. To begin with inequalities:

> "Every citizen on earth wants his or her environment used and managed in a sustainable manner. But the divided economic conditions force different environmental management objectives on different nations. While the rich and the well fed are more interested in the environment because they want to secure their future, the poor and the dispossessed, caught in a daily struggle to survive, are more interested in the environment because they want to secure their present."
> (Agarwal, 1992: 111)

68. Briefly, overconsumption by a small minority both at the international and national level has to be brought under control. In other words, the principle of equitable distribution that is the very foundation of most indigenous resource management systems has to be reasserted in planning socio-economic development at the national and at the international levels.

69. The second aspect that has changed is the control over the resources themselves. More and more of them are being monopolized by a small minority, at both the national and the international levels. At the national level, we have seen its consequence in the form of displacement and impoverishment. What is true of individuals and communities is equally true of nations that are forced to keep diverting their land and other resources to cater to overconsumption by a small minority of the world population living in the rich countries. The impoverishment, displacement and marginalization of indigenous communities is a direct consequence of this process. This issue has been evaded in most countries, as can be seen from the failure of land reforms, as well as at the international level, as can be noted in the failure of United Nations Conference on Trade and Development or the efforts made through General Agreement on Tariffs and Trade (GATT) to impose unjust conditions on the South in the name of intellectual property:

> "This reluctance to confront the ownership issue is basically the reluctance to confront the problem of power. For ownership is one major basis of power." (Kurien, 1974: 5).

70. As far as the indigenous populations are concerned, the ownership issue concerns primarily their land, from which they are displaced or which is alienated from them in some form or other. Combined with this is access to their forest and water resources. We have mentioned above that they do not have a tradition of tree plantation since their culture and technology ensured regeneration through natural processes. While preserving the conservation orientation and the tradition of balanced use that is one of the pillars of all indigenous resource management systems, the depletion of the resources because of overconsumption by a small minority and the consequent over-exploitation by these traditional communities cannot be ignored. Ways would have to be found of regenerating the resources through human efforts instead of leaving it to natural processes alone.

71. It is in such efforts that the problem of ownership has come in the way, as the experience of many community forestry projects in India has shown. As long as replantation efforts remained at the individual level, and these individuals produced mainly commercial species needed by industry, they got all possible cooperation from the State, as well as from commercial-industrial interests. When, however, these schemes became a community effort, they met with fierce opposition from the same sources, as well as local vested interests. No land was made available for these efforts, nor was technical assistance provided. The opposition grew stronger when women tried to find an equal voice in decision-making in these schemes. Sometimes men from their own community opposed their empowerment, of which community-based schemes were a tool. (For the experiences of 14 such schemes in 3 States of India, see Fernandes, 1989). At the international level, the refusal to accept any cartel such as Organization of Petroleum Exporting Countries and to fix a floor price for raw materials, while insisting on the intellectual property

rights of the rich countries, is one of many signs of this unequal relationship that ensures ownership and control of all the resources by a small minority.

XIII. CONCLUSION

72. We have analysed in this paper indigenous traditions that ensured a balanced use of natural resources, as well as sustainable development, in an equitable society. With the formal economy at the national level and an unjust international order at the global level taking control of their resources, they have been impoverished and they have given up the principles on which their socio-economic systems were based. These systems themselves may not be relevant today but the principles remain valid.

73. For any sustainable development to be meaningful, the principles of equity, conservation orientation and renewability have to be re-established. Controlling overconsumption and dealing with the question of the ownership of resources at the international and at the national levels are crucial for this to be realized. As far as the indigenous populations are concerned, control over the resources in which their regions abound has to be shared with them and they cannot continue only as subordinates to the mainstream that has marginalized them.

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WAYS AND MEANS OF STRENGTHENING SUSTAINABLE AND ENVIRONMENTALLY SOUND SELF-DEVELOPMENT OF INDIGENOUS PEOPLES

Background paper prepared by
Darrell Addison Posey

Introduction

1. Conservation has always been a cultural question, although environmentalists have acted for decades as though the preservation of nature had nothing to do with the human species. Today, however, experienced environmentalists and conservationists recognize that unless people have a direct stake and interest in conservation, then the best designed projects in the world stand little chance for long-term success. Meanwhile, scientists have begun to demonstrate how native peoples can teach us new models for sustained natural resource use and management. Their ancient indigenous traditions, developed through millennia of experience, observation, and experiment, are extremely relevant in providing future options for sustainable natural resource management.

2. This paper outlines the importance of traditional knowledge in the discovery of the tropical forests' biological riches - economic as well as ecological. The basic argument is that native peoples know how to utilize and conserve the forest, which is currently being destroyed partly for lack of knowledge about how to utilize its vast diversity of medicines, foods, natural fertilizers and pesticides, etc.

3. Fundamental to the preservation of the forest and those peoples living in it, is to show that standing, living forests are more valuable than cut, burned ones. The sad truth is that currently the forest is economically valuable for cattle, lumber, and gold - all of which are obtained only through the destruction of tropical forests and savannas. Indigenous peoples can teach us how to give greater value to the LIVING tropical forest - but only if they survive and we can learn to give them equal status in the future of this Planet.

4. Accepting that native peoples, despite their different cultural habits, have much to teach us - but in their own language and with their own conceptual categories - seems one of the hardest lessons that modern society must learn. This is a profoundly difficult problem precisely because colonizing societies have historically used these differences to justify the imposition of their version of order, progress, and civilization on native peoples, while exploiting their lands and natural resources.

I. ETHNOBIOLOGY AND INTERDISCIPLINARY RESEARCH

5. Ethnobiology is a powerful science because it combines the interdisciplinary and multidisciplinary forces of our Western cultural traditions in order to document, study and give value to the knowledge systems

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Note: The opinions expressed in this paper are those of the author.

of native peoples. Ethnobiology is anthropology, but it is also biology; it attempts to analyse what native peoples know about their environment. Ethnobiologists present indigenous peoples not as exotic creatures with strange cultural habits, but rather as societies that live in close association with their environments. Most of them have done so for millennia. In Brazil, for example, recent archaeological evidence shows indigenous presence in South America for as much as 35,000 years, much more than originally thought.

6. Traditionally, Indians are thought of as merely exploiters of their environments - not as conservers, manipulators, and managers of natural resources. Researchers are finding, however, that presumed "natural" ecological systems in Amazonia are, in fact, products of human manipulation (e.g. Alcorn, 1981, 1989; Anderson & Posey, 1985; Balée, 1989a; Balée & Gély, 1989; Clement, 1989; Denevan & Padoch, 1987; Frickel, 1959; Posey & Overal, 1990; and others). Likewise, old agricultural fallows are extensive and reflect human-engineered genetic diversity (Balée, 1989b; Denevan & Padoch, 1987; Irvine, 1989, and others).

7. Since aboriginal populations were many times larger than today's indigenous populations, the extent of human influence can easily be underestimated. Ethnohistorical research with the Kayapó Indians, for example, shows that contact with European diseases came before face-to-face contact with the White Man. Epidemics led to intra-group fighting and fission that, in turn, had some interesting effects on biological species dispersal as well (Posey, 1987). A form of "nomadic agriculture" developed for the cultivation of many domesticated and semi-domesticated plant species in managed environments near trail sides, abandoned villages and at campsites (Posey, 1986). Seeds, tubers, and cuttings were spread over vast areas to ensure the availability of valuable medicinal and edible species. Agricultural practices also spread, along with techniques to manage old fallows for wildlife and useful plants.

8. Over 76 per cent of the plant species used by the Kayapó are not "domesticated", nor can they be considered "wild", since they have been systematically selected for desirable traits and propagated in a variety of habitats. During times of warfare, the Kayapó could abandon their agricultural plots and survive on the semi-domesticated species that had for millennia been scattered in known spots throughout the forest and savanna. Old agricultural field sites became hunting preserves and orchards, since, as younger fields, they had been planted by the Indians to mature for such purposes. In other words, agricultural plots were designed to develop into productive agroforestry plots dominated by semi-domesticated species, thereby allowing the Kayapó to shift between being agriculturalists and hunters-gatherers. Such patterns appear to have been widespread in the lowland tropics and make archaic the traditional dichotomies of wild vs. domesticated species, hunter-gatherers vs. agriculturalists, and agriculture vs. agroforestry.

9. Indigenous manipulation of environments in Amazonia was significant in molding other ecological systems. In the formation of "islands of forest" (Apêtê) in the campo-cerrado, for example, the Kayapó were found to have concentrated plant varieties collected from an area the size of Western Europe into a 10 Ha. plot of Apêtê (Anderson & Posey, 1989).

10. Thus one of the major lessons learned from research in the last decade is that apparent "natural" landscapes in Amazonia may be the products of vast aboriginal populations or even diversified manipulation of ecological systems by less populous historic populations. Far too many biologists and ecologists, however, ignore the archaeological, historical, anthropological and ethnobiological literature linking biodiversity with human activity. Credible research in the future will have to correct this situation.

II. LEARNING FROM INDIGENOUS PEOPLES

11. Indigenous knowledge is an integrated system of beliefs and practices distinctive to different cultural groups. In addition to the information shared generally, there is specialized knowledge held by a few. Many indigenous groups have their own specialists in soils, plants, animals, crops, medicines, and rituals. But each individual believes that he or she has the ability to survive alone in the forest indefinitely. This offers great personal security and permeates the fabric of everyday life.

12. In an attempt to separate cultural interpretations by the investigator from explanations by the native, anthropologists and ethnobiologists adopted the linguistic distinction of "emic" and "etic". "Emic" interpretations reflect cognitive and linguistic categories of the natives, whereas "etic" interpretations are those that have been developed by the researcher for purposes of analyses.

13. Sometimes the "consciousness" of knowledge is just a matter of putting an abstract label on a well-known, but unconscious, non-verbalized phenomenon. The native of any culture can become conscious of certain "common sense" acts of "management" when alerted to the phenomenon by the researcher, as in the case of observing an Indian throwing seeds on the ground and stepping on them.

14. "Yes, we do that", he may say, "but that's not planting or management". At least the phenomenon is agreed upon by researcher and is being researched, even if the "emic" and "etic" terminologies are different. But the informant too learns of the categories being used by the researcher and may even modify his own way of looking at his own culture.

15. The distinction between "interpretation" and "reality" becomes even more complicated when dealing with higher levels of abstraction, such as the notion of spirits and mythological beings or forces. Native peoples generally make a point of saying that the forest for them is not just an inventory of natural resources, but represents the spiritual and cosmic forces that make life what it is. What, then, is the role of metaphysical concepts in management practices?

16. The Kayapó, for example, believe that old, abandoned village sites are full of spirits. Fear of spirits puts these old sites off limits for many Indians. Only those who deal with spirits (shamans) and special hunting parties go to these sites. Thus, these abandoned camps and villages effectively become protected reserves, with a high diversity of secondary growth that also attracts many animals. The spirits effectively serve as ecological protective agents.

17. Consider what the Kayapó call the Pitu plant (actually a grouping of plants from several botanical families). Pitu is one of the few plants that is thought to have a spirit - a very powerful spirit that once killed thousands and thousands of Indians. The spirit of this plant is so dangerous that if people go near it, or touch it, they will die. It is said, however, tht Pitu can be planted by shamans in specialized, secret medicinal gardens. Fear of coming into contact with Pitu is sufficient to keep out unwanted guests in these gardens and to guarantee the secrecy of the garden and its contents.

18. An "etic" interpretation of Pitu maintains that the fear of its spirit functions to protect medicinal gardens and restrict use to specialists of medicinal plants. It would be impossible, however, to find an Indian who would say: "Well, yes, the Pitu spirit functions in our society as an ecological management agent to protect our medicinal plantations".

19. So, we return to the initial problem of interpreting "reality" of native peoples. It is the problem of "emic" versus "etic" analyses that has scared biologists and ecologists away from anthropology, which they consider unscientific. Botanists and zoologists do not, after all, have to confirm their scientific analyses with their biological subjects. Having only an "etic" level of analyses makes scientific investigation much easier. It is important, however, not to confuse scientific "objectivity" with the obscuring of "reality". There is much to learn from the interpretation of indigenous myths, legends, and folk taxonomies whether or not the methods meet the rigors of some scientists.

20. A raging debate is now occurring within anthropology itself as to whether cultural interpretation can ever become scientific. To the ethnobiologist, the debate is rather inane. Ethnobiologists attempt to use all of the scientific tools that can be borrowed from botany, zoology, geography, pedology, genetics, ecology, etc. But that does not mean abandoning the quest for an "emic" view as well. If searching for native "realities" noses a bit too far into metaphysics or "fuzzy-science" for some hardliners, then we must conclude that not everyone can or should be an ethnobiologist. We cannot forget, however, that attitudes regarding what is "true" science seriously divide the social and natural sciences.

III. PROBLEMS OF INTERDISCIPLINARY RESEARCH

21. One of the greatest barriers to interdisciplinary scientific investigation is the differential time-frames for research used by social and natural scientists. Biologists consider a few months to be a reasonable field period, whereas anthropologists think in terms of years in order to dominate a language well enough to delve into native perceptions of natural resources, concepts of management, mythological forces, and other levels of conscious or unconscious knowledge. For this fundamental difference alone, it is justifiable to develop a hybrid field of ethnobiology that trains students to weigh as equally important the cognitive analyses of semantic fields as the gathering of basic biological and ecological data.

22. Another fundamental barrier to research into traditional knowledge is the methodological problem of assessing the degree to which knowledge is shared

within a society. Even in the smallest of societies, individuals do not know the same things. Scientists who have worked with native peoples have painfully learned this - or ignored it in their data analyses.

23. The Kayapó and other Jê peoples, for example, have highly specialized knowledge. Twenty-six per cent of the population of the Kayapó village of Gorotire (population approximately 700) are medicinal curing specialists. Each specialist knows certain types of animal spirits that provoke diseases and can only be treated with a specific array of medicinal plants, magical songs, and curing rituals.

24. Roughly 15 per cent of Gorotire inhabitants can identify and name at least 35 species of stingless bees (Meliponidae). The remaining 85 per cent have difficulty recognizing more than eight. But some specialists can tick off 65 species, including details of their morphological characteristics, nesting habits, flight patterns, seasonal production of honey, and varied uses of their wax, bitumen, pollen, and honey.

25. To complicate matters, specialists frequently do not agree on details of knowledge. Two specialists in "fish deseases" (tep kane), for example, may vehemently disagree about which method for preparing "fish medicine plants" is most effective - or even which plants can be used for which type of disease.

26. These methodological problems can be handled by trying to construct statistically significant survey and analytical methods to describe "typical" Kayapó knowledge, but such endeavours are nightmares for field researchers and result in questionable benefits. If it is the detailed knowledge of biological and ecological knowledge that is of interest, then careful documentation, checking and cross-checking to find anomalies and contradictions between informants is adequate to advance ethnobiological research. More importantly, it is adequate to advance hypotheses (see Posey, 1986).

27. Most ethnobiological studies have tended to search in native knowledge only for what is already known from science. So we look for categories of plant use, animal behaviour, ecological relationships, soil types and landscapes that already exist in our own knowledge system.

28. Utilizing indigenous concepts, however, short-cuts, or even breakthroughs, in scientific investigation can occur through the quite appropriately scientific method of hypothesis generation and testing. No ethnobiologist has ever insisted that traditional knowledge be taken at face value, but rather that such statements be used to guide researchers to look for unknown categories of knowledge or unknown relationships, i.e. to propose hypotheses to test indigenous concepts.

29. In this manner, new species and subspecies of bees have been "discovered" from bee specialists, interesting active compounds have been isolated in laboratories as a result of ethnopharmacological research with medicinal curers, diets of animals have been analysed with the help of skilled hunters,

pioneering behavioural studies of little-known species have been carried out with the help of native specialists, and soil-plant-animal complexes have been learned from veteran agriculturalists.

30. The decisions of scientists as to how to propose their hypotheses based upon indigenous knowledge reveal the arbitrary nature of this basic step in the scientific pursuit, since the researcher must frequently discard from his formulations the "unlikely" or "unbelievable" elements of informants' statements. But what is "unlikely" and "unbelievable" more often reflects the researcher's ability to grasp native "reality" than any real scientific criteria. None the less, the proposal and testing of hypotheses provides the methodological and theoretical bridge necessary to link scientific research with traditional knowledge.

IV. CATEGORIES OF KNOWLEDGE

31. A "complete view" of indigenous knowledge is, therefore, difficult (or even impossible) to convey because of its underlying cultural complexity. It is possible, however, to identify categories of indigenous knowledge that indicate new research directions, even short-cuts, for Western science:

A. Ethnoecology

32. Indigenous peoples identify specific plants and animals as occurring within particular ecological zones. They have a well-developed knowledge of animal behaviour and also know which plants are associated with particular animals. Plant types in turn are associated with soil types. Each ecological zone represents a system of interactions among plants, animals, soils, and, of course, the people themselves.

33. The Kayapó, for example, recognize ecosystems that lie on a continuum between the poles of forest and savanna. They have names, for example, for as many as nine different types of savanna - savanna with few trees, savanna with many forest patches, savanna with scrub, and so on. But the Kayapó concentrate less on the differences between zones than on the similarities that cut across them. Marginal or open spots within the forest, for example, can have microenvironmental conditions similar to those in the savanna. The Kayapó take advantage of these similarities to exchange and spread useful species between zones, through transplanting seeds, cuttings, tubers, and saplings. Thus there is much interchange between what we tend to see as distinctly different ecological systems.

34. Kayapó agriculture focuses upon the zones intermediate between forest and savanna types, because it is in these that maximal biological diversity occurs. Villages often occur in these transition zones. The Kayapó not only recognize the richness of "ecotones", but they actually create them. They exploit secondary forest areas and create special concentrations of plants in forest fields, rock outcroppings, trail sides, and elsewhere.

35. The creation of forest islands, or Apêtê, demonstrates to what extent the Kayapó can alter and manage ecosystems to increase biological diversity. Apêtê begin as small mounds of vegetation, about one to two metres round, created by transporting organic matter obtained from termite nests and ant

nests to open areas in the field. Slight depressions are usually sought out because they are more likely to retain moisture. Seeds or seedlings are planted in these piles of organic material. The Apêtê are usually formed in August and September, during the first rains of the wet season, and then nurtured by the Indians as they pass along the savanna trails.

36. As Apêtê grow, they begin to look like up-turned hats, with higher vegetation in the centre and lower herbs growing in the shaded borders. The Indians usually cut down the highest trees in the centre to create a donut-hole centre that lets the light into older Apêtê. Thus a full-grown Apêtê has an architecture that creates zones that vary in shade, light, and humidity.

37. These islands become important sources of medicinal and edible plants, as well as places of rest. Palms, which have a variety of uses, figure prominently in Apêtê, as do shade trees. Even vines that produce drinkable water are transplanted here. Apêtê look so "natural", however, that until recently scientists did not recognize that they were in fact human artefacts.

38. According to informants, of a total of 120 species inventoried in 10 Apêtê, about 75 per cent could have been planted. Such ecological engineering requires detailed knowledge of soil fertility, micro-climatic variations, and species' niches, as well as the interrelationships among species that are introduced into these man-made communities.

39. The eating habits of deer and tapir are well known to the Indians, and their favourite foods are propagated in forest islands. In this sense, forest islands must be viewed as both agroforestry plots and hunting reserves.

40. The Kayapó are aware that some species developed more vigorously when planted together. They frequently speak of plants that are "good friends" or "good neighbours". One of the first of these "neighbours complexes" I was able to discover was the "tyruti-ombiqua", or "banana neighbours". Among the plants that thrive near bananas are some of the mekraketdja ("child want not") plants, which are very important in regulating fertility among the Kayapó (Elisabetsky & Posey 1989).

41. The Kayapó characterize such synergistic plant groups in terms of "plant energy". These groups can include dozens of species and require complex patterns of cultivation. Thus a Kayapó garden is created by carefully combining different "plant energies" just as an artist blends colours to produce a work of art. Indian fields thrive on diversity within the plots.

42. This diversity is quite ordered to the Indian eye, with careful matchings between plant varieties and micro-environmental conditions. What appear to us as random field plantings turn out to have five more or less concentric zones, each with preferred varieties of cultivars and different cultivation strategies. Kayapó fields look like a real mess to Westerners used to nice "clean" fields with orderly, symmetrical rows.

B. Ethnopedology

43. A survey of indigenous soil taxonomies shows sophisticated horizontal and vertical distinctions based on texture, colour, drainage qualities, friability, and stratification. Soil qualities are frequently related to indicator plant species that allow Indians to predict floral and faunal components associated with specific soil types, each of which is managed differently according to individual characteristics. Sweet potatoes, for instance, like the hotter soil and thrive in the centre of fields where shade from the margins rarely penetrates. The plants must be well aerated, however, or soil compaction will smother the root system. Much hand work is necessary to turn over the soils, take out larger tubers and replant smaller ones.

44. The Kayapó use various types of ground cover such as vegetation, logs, leaves, straw, and bark to affect moisture, shade, and temperature of local soils. Holes are sometimes filled with organic matter, refuse, and ash to produce highly concentrated pockets of rich soil. Old banana leaves, stalks, rice straw, and other organic matter are piled and sometimes burned in selected parts of fields to create additional local variations.

45. The Kayapó have dozens of types of plant ash, each said to have certain qualities preferred by specific cultivars. The ash is usually prepared from the vines, shucks, stalks, and leaves of plants that have been cut or uprooted during harvesting or weeding. Sometimes piles of organic matter are made, with the different varieties carefully separated and allowed to dry in the sun until they will give a complete burn. The ashes are then distributed to the appropriate part of the field.

C. Ethnozoology

46. Like other indigenous groups, the Kayapó conscientiously study animal anatomy, giving special attention to stomach contents of game animals. They are also astute observers of many aspects of animal behaviour. The Kayapó encourage their children to learn the behaviour patterns and feeding habits of different animal species, which are considered to have their own "personalities".

47. Part of this knowledge is gained through the rearing of pets. In a survey done with Dr. Kent Redford (manuscript in preparation), we have found over 60 species of birds, reptiles, snakes, amphibians, mammals - even spiders - being raised in the village.

48. Kayapó use a precise knowledge of insect behaviour to control agricultural pests. For example nests of "smelly ants" - mrum kudja (of the genus Azteca) - are deliberately placed by the Indians in gardens and on fruit trees that are infested with leaf-cutting ants (Atta spp.). The pheromones of the "smelly ants" repel the leaf-cutters. These protective ants are also highly prized for their medicinal properties and are frequently crushed and their highly aromatic scents inhaled to open up the sinuses.

49. The Indians cultivate several plants containing extra-floral nectars, often on the leaves or stems, which attract predatory ants to serve as

"bodyguards" for the plant, and plant banana trees to form a living wall around their fields, because predatory wasps prefer to nest under the leaves.

50. Stingless bees (Meliponidae) are one of the most valued insect resources. During the dry season, groups of men frequently go off for days to find honey, which they often drink at the collection site. Beeswax is brought back to the village, to be burnt in ceremonies and used in many artefacts.

51. One of my knowledgeable and patient teachers, the shaman Kwyra-ka, was a great expert on stingless bees. When I went with him and his son Ira upriver to hunt, we spent most of our time searching for honey. His son had learned to draw at the missionary school and loved to sketch the bees' nests. I was originally trained in entomology, and realized what a goldmine of information these two Indians possessed about the behaviour of what our scientists still considered little-known species.

D. Ethnomedicine and ethnopharmacology

52. Almost every Kayapó household has its complement of common medicinal plants, many of which are domesticates or semi-domesticates. Shamans specialize in the treatment of particular diseases. Diarrhoea and dysentery remain the major killers in the humid tropics. The Kayapó classify over 150 types of diarrhoea/dysentery, each of which is treated with specific medicines. Folk categories can be more elaborate and detailed than their Western counterparts. Ethnopharmacologists and physicians frequently forget that disease categories, like all intellectually perceived phenomena, are culturally classified and not universal.

E. Ethnobotany

53. Kayapó plant classification is based on each plant's pharmacological properties - that is, for which diseases they can serve as a cure. The shaman Beptopoop was the first Kayapó to show me how rare medicinal plants could be brought from distant areas and transplanted to places near one's home, or in special medicinal rock gardens. He specialized in curing the bites and stings of snakes, lizards, and scorpions, and knew the minutest details of their behaviour. I got a feeling for the sophistication of Kayapó plant knowledge when he showed me how to graft a prized species for treating scorpion sting onto more common stock that grew near his favourite forest trail.

54. Indian plant categories cut across morphologically-based botanical groupings. Nevertheless, these taxonomies often exhibit a high degree of correlation with Western botanical classification.

55. In addition to the discovery of medicinal plants, ethnobotany can establish new uses for known species and document the uses of unknown ones. "Kupa" (Cissis gongylodes), for instance, is an edible domesticate known only to the Kayapó and some of their relatives. An estimated 250 plants have been collected that are used for their fruits alone.

F. Ethnoagriculture and agroforestry

56. Indigenous agriculture begins with a forest opening into which useful species are introduced and ends with a mature forest of concentrated resources, including game animals. The cycle is repeated when the "old-field" forests develop canopies too high and dense for efficient production and are cleared again.

57. Agricultural plots are designed to be productive throughout this reforestation cycle. Contrary to persistent beliefs about indigenous slash-burn agriculture, fields are NOT abandoned after a few years from initial clearing and planting. On the contrary, old fields offer an important concentration of diverse resources long after primary cultivars have disappeared. Kayapó "new fields", for example, peak in production of principal domesticated crops in two or three years but continue to bear produce for many years: sweet potatoes for four to five years, yams and taro for five to six years, papaya and banana for five or more years. The Kayapó consistently revisit old friends seeking these lingering riches.

58. Fields take on new life as plants in the natural reforestation sequence begin to appear. These plants soon constitute a type of forest for which the Kayapó have a special name that means mature old fields. Such fields provide a wide range of useful products and are especially valuable for their concentrations of medicinal plants.

59. Old fields also attract wildlife to their abundant, low, and leafy plants. Intentional dispersal of old fields and systematic hunting extends human influence over the forest by providing, in effect, large "game farms" near human population centres.

60. The Kayapó do not make a clear distinction between fields and forest, nor between wild and domesticated species. Gathered plants are transplanted into concentrated spots near trails and campsites to produce "forest fields". The sides of trails themselves are planting zones. It is not uncommon to find trails composed of four-metre-wide cleared strips of forest.

61. The processes of domestication, frequently assumed to be historical, are still occurring in indigenous groups like the Kayapó. With the team members of the Kayapó Project, we have collected literally hundreds of plant varieties that have been systematically selected by Kayapó and planted in human-modified ecological systems. It is fair to conclude that similar activities have gone and continue to go on throughout the Amazon among native peoples. Thus plant species are probably being led toward domestication as you read this article.

V. KNOWLEDGE AS BUSINESS

62. Industry and business discovered many years ago that indigenous knowledge means money. In the earliest forms of colonialism, extractive products were the basis for colonial wealth. More recently, pharmaceutical industries have become the major exploiters of traditional medicinal knowledge for major products and profits.

63. The annual world market value for medicines derived from medicinal plants discovered from indigenous peoples is US$ 43 billion. Estimated sales for 1989 from three major natural products in the United States alone was: Digitalis, US$ 85 million; Resperine, US$ 42 million; Pilocarpine, US$ 28 million. (Source: Fundaçao Brasileira de Plantas Medicinals - FBPM.)

64. Although no comparable figures are published for natural insecticides, insect repellents, and plant genetic materials acquired from native peoples, the annual potential for such products is easily that of medicinal plants. Research into these natural products is only beginning, with projections of their market values exceeding all other food and medicinal products combined. The international seed industry alone accounts for over US$ 15 billion per year, much of which derived original genetic materials from crop varieties "selected, nurtured, improved and developed by innovative third world farmers for hundreds, even thousands of years" (South, September 1989: 95).

65. Likewise, natural fragrances, dyes, body and hair products are coming to account for major world markets. Figures from the Body Shop, considered to be one of the new stars of success in international enterprise, show an annual sales of $90 million with a growth rate last year of 60 per cent (Time, 23 April 1990: 39). The 300 Body Shop products are derived from plants, are not tested on animals, and mostly come from "Third World" countries. These products are marketed as coming from ecologically sustainable projects managed by the native peoples themselves. The success of Anita Roddick, founder of the 14-year old British company, has earned her the title of Britain's "Retailer of the Year". Such renown will not go unnoticed by the hundreds of would-be clones that will appear to take up Anita's marketing strategy.

66. Growing interest and catapulting markets in "natural" food, medicinal, agricultural, and body products signals increased research activities into traditional knowledge systems. Now, more than ever, the Intellectual Property Rights of native peoples must be protected and just compensation for knowledge guaranteed. We cannot simply rely upon the "good will" of companies and institutions to "do right by" indigenous peoples. If something is not done now, mining of the riches of indigenous knowledge will become the latest, and ultimate, neo-colonial form of exploitation of native peoples.

67. Ecologists are justifiably concerned with the ecological impact of production of "natural products" that become too successful. The tendency is always toward monocultures of cash crops. Many worry that international demands may spell the end of biodiversity, rather than encourage conservation of natural resources as initially desired.

68. Michael Soulé and Kathryn Kohm (1989) outline this concern: "Increased pressure on biological resources arises because of increasing human populations, changing consumption patterns, and new technologies. Although agricultural intensification will continue to be necessary, its impact on biological resources is not predetermined. Conservation poses important research questions relevant to the design of new production technologies and land-use systems: Can biologically diverse and low energy technologies be extended and/or intensified? Can production systems be differentially

intensified so as to maintain biological diversity in other parts of a system? How does increased exploitation of specific species affect other species and general system properties?"

69. Provocations of cultural changes can be equally disconcerting. By establishing mechanisms for "just compensation" of native peoples, are we not also establishing mechanisms for the destruction of their societies through the subversion of materialism and consumerism?

70. Given current realities, such concerns are reduced to romantic notions. The fact is that indigenous societies and their natural environments are being destroyed by the dramatic expansion of industrialized society NOW. And, besides, pharmaceutical companies and "natural products" companies have tasted success in their efforts: they will not go away.

71. Certainly the mechanisms of WHAT is "just compensation" and HOW such benefits would be distributed opens a Pandora's box. But to NOT open this box is to accept the ethical and moral responsibility of "paternalism" (those from "advanced societies" know what is good for the "native" because "we" have already made the mistakes of squandering our cultural and natural wealth) that has undermined indigenous independence since the first wave of colonialism.

72. Native peoples must have the right to choose their own futures. Without economic independence, such a choice is not possible.

VI. SUGGESTIONS FOR THE FUTURE

73. The following suggestions are offered to guide future research into traditional natural resource management techniques and their applications:

(a) Genetic manipulation of flora and fauna by native peoples remains relatively little known. Research into selection procedures, decisions behind selection choices for different species and varieties, inter- and intra-tribal variations in selection of variables, and evolutionary consequences of differential selective behaviour should be systematically studied.

(b) More extensive studies should be made to describe how native peoples modify landscapes and environments.

(i) Fire is immensely important in almost all traditional management systems, yet few details of fire use are available (when to burn, what can or cannot be burned and when, temperature of burn, frequency of burning, protection from burning, products of burning - use of charcoal, ashes, stumps, charred root systems, etc.). Likewise, little is known of the effects of fire on biological communities (which species are destroyed, which are stimulated, effects of burning on blooming and fruiting timing and production, modification of morphological structures due to burning, etc.);

(ii) Most research to date has focused on indigenous manipulation of forests and agricultural plots. Yet evidence exists showing that other habitats may also be significantly modified. Scrub

forests and savannas, for example, are certainly molded by use of fire. Creation of "forest islands" (Apêtê) in campo-cerrado by the Kayapó shows that ecological communities can even be man-made with a high diversity of useful plants from very distant areas. Hillsides, trails, and even rocky outcroppings, are also modified to maximize resource availability (see Posey, 1985). To get a more complete picture of indigenous adaptation and management, future research should emphasize investigations into these lesser studied habitats;

(iii) Rivers, streams, and seashores can also be modified by indigenous activities. Although extensive documentation of the dependence of native peoples on fresh and salt water species exists, only scattered evidence (e.g., Chernela 1989) is available on how native peoples manage these important resources.

(c) Base-line studies are necessary to establish wildlife population composition, numbers, and carrying capacities. Many researchers have observed that old fields are favoured hunting areas for Indians, and I have proposed that where old fallow management is practised, wildlife populations may indeed be higher in number and species diversity. This hypothesis goes against traditional thinking that maintains the innate destructiveness of Indians to wildlife populations. To prove or disprove the thesis, base-line data from uninhabited areas must be available for comparison with managed, inhabited areas.

(d) Ethnolinguistic studies can provide us with valuable data on the historical relationships between peoples and the botanical interchanges that occurred between them, or the cognitive geographical maps that link resources with the physical world. Myths, legends, ceremonies, rituals, and songs are filled with ecological and biological information, but very few studies have systematically analysed their contents.

(e) More long-term sequence studies of fallows and other managed habitats are needed to understand the ecological transitions that accompany growth. These studies, coupled with knowledge of the natives' uses of resources in the growth sequences, can give a much clearer picture of options for forestation and reforestation schemes.

(f) Multidisciplinary research teams should be encouraged, despite the conceptual and time difficulties that separate disciplines. Focusing upon the study of traditional knowledge can, indeed, be used to reunite the fragmented disciplines of science.

(g) Special ethnobiological academic and training programmes should be established to develop the interdisciplinary field, combining the methods and techniques of ecology, biology, anthropology, and linguistics. Ethnobiological research centres should also be established to coordinate multidisciplinary research and design programmes for the application of traditional knowledge. These centres should include laboratories for the analyses of medicinal compounds, nutritional value of edible plants, chemical characteristics of natural fertilizers, etc.

(h) Major international policy shifts by Governments, lending institutions, research institutions, private foundations, and industry should occur to support research into traditional knowledge use and its potential applications in solving modern world problems. Applied research centres need to be established so that experimental plots, analytical laboratories, and field research stations can investigate ways for sustained resource management based on indigenous models.

(i) New categories of plant and animal use (as cosmetics, alternative building materials, and other natural products) should be investigated along with international markets for these products. Once the diversity of native products and their market potentials are known, it will be possible to design reforestation and forestation projects that are productive in all stages of their development. A real challenge rests with the implementation of forestation programmes and forest reconstruction projects that include native peoples as INTELLECTUAL participants in all stages of project planning and implementation.

(j) Development of alternative market infrastructures that are sensitive to indigenous peoples and their needs. If market mechanisms that respect both the ecological balance and the intellectual integrity of indigenous peoples cannot be developed, then there is little hope that our consumer-based society can survive.

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WAYS AND MEANS OF STRENGTHENING SUSTAINABLE AND ENVIRONMENTALLY SOUND SELF-DEVELOPMENT OF INDIGENOUS PEOPLES

Background paper prepared by
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1. At present human existence is dominated by a technological society founded on the mechanical worldview of western science with its materialistic values - a worldview, value system and way of life that for all its benefits has brought us to the brink of disaster. It stands in sharp contrast to the worldviews, value systems and lifestyles of indigenous and traditional peoples, which are only now beginning to be recognized as valid in their own right and possibly critical for our very survival as a species. For this reason the formulation and implementation of knowledgeable, sound, participatory policy on indigenous peoples is a vital task for the United Nations.

2. Western/northern science and industry from their outset shared the conviction that man is master of all nature and would bring about a Golden Age for all humanity by conquering, subduing and transforming material nature to his own ends. Nature, according to John Locke, the principal philospher architect of this tradition, has no value in itself, gaining value only when transformed by industrial man. This view of nature still prevails today, notably in genetic engineering and patent discussions preparing GATT.

3. In the spirit of Locke's "the negation of nature is the road to happiness", the European White/Younger Brother seized the lands of the Hopi, the Kogi and most other indigenous cultures around the world, on grounds dating back to a Papal Bull of 1493 stating that infidels had no land rights, while Christians did. Indigenous peoples were identified as part of the "brute nature" the Europeans were to conquer and subdue. Since that time, the Euro-American culture has perpetuated the dogma that indigenous people are backward, ignorant and impoverished without the white man's intervention.

4. We now look back on a tragic history of the White/Younger Brother's destruction of indigenous cultures to build his technological world. It is a world in which non-human species are rapidly extinguished as vast tracts of forest and mineral-rich earth are transformed into a network of great urban sprawl cities, a top-heavy world in which 7 per cent of the people own 60 per cent of the land and use 80 per cent of the available energy. It is a world in which nature has been seen only as a supply base and a dumping ground, a polluted world which testifies to the White Brother's failure to respect the Red Brother's sacred Earth wisdom. It is a world in which we finally recognize that humanity may well face extinction through its own folly.

Note: The opinions expressed in this paper are those of the author.

Worldviews and prediction

5. The Hopi of North America and the Kogi of South America are among many indigenous cultures giving us prophecies from the past as well as present evaluations of our global crisis. These two in particular foretold not only nature's destruction at this time, but specifically identified, as we saw above, the inventive, technological branch of humanity as responsible because it fails to heed the sacred earth knowledge and wisdom of indigenous peoples.

6. Neither the Hopi nor the Kogi accounts tell us that technology is bad in itself, that we should abandon it and "go back to nature". On the contrary, both of them validate technology as an important aspect of humanity, but warn that it must be brought into harmony with the sacred natural world through the deep earth wisdom of indigenous peoples.

7. How did these indigenous peoples know what technology would bring, where it would lead humanity? Why is it that the science on which our technological world is based - the science which so prides itself on its ability to predict - failed to predict its own conequences while indigenous cultures saw clearly where it would lead?

8. The answer to this question lies in a fundamental difference between the worldviews of indigenous and industrial peoples. The failure of Euro-American Scientists to predict the consequences of the technology they spawned is directly related to the fact that their mechanical worldviews is diametrically opposed to the organic worldview of indigenous peoples.

9. The mechanical scientific worldview holds that the universe is fundamentally lifeless, that life happened by accident on the surface of this planet, that everything in nature including humans and their societies can be understood as machinery composed of mechanical parts. In this view, the role of science is to study nature objectively - as though from outside - by reducing this machinery to its parts; to understand it so that human society can gain control over it and exploit it for human purposes.

10. In the worldview shared by indigenous peoples everywhere, despite differences in its formulation, the universe, nature, is alive and sacred, all beings in it are related and interdependent: the stars, the rocks, the waters, the winds, the creatures, the people, the spirits and so on. The human role within nature is to hold it sacred and to live in a balanced way within it, to give back as much as is taken.

11. One worldview sees nature as fundamentally alive and sacred; the other sees nature as fundamentally mechanical and exploitable. By understanding the world as a single, interconnected and interdependent living system, indigenous peoples knew that the consequences of the White Brother's destructive ways would necessarily be disastrous.

Native science

12. There can no more be one true science than there can be one true religion. Native science (not to mention Arabic, Vedic, Taoist and other) has contributed enormously to modern knowledge. Mechanist science, in its

reductionist search for the parts of natural "machinery", has failed to see holistically, systemically, Dr. Greg Cajete of the Santa Clara Pueblo, writing about indigenous science, points out that it is carried out and taught in "high context" settings, i.e. out in nature itself, rather than in the "low context" industrial society settings of laboratories and classrooms isolated from nature. He points out also that indigenous science is not something learned in limited years of formal training, but that it is a lifelong task. The whole enterprise of industrial society science is based on removing phenomena from their natural context to "control" them, while the whole concept of indigenous science is teaching natural phenomena in natural settings in order to integrate yourself with them. It is not a science that stands apart from nature to look at it objectively; it does not eliminate the sacred, but integrates it. It fosters dialogue between humans and the rest of nature.

13. Native science, which by Euro-American scientific categorization includes biology, geology, astronomy, navigation, meteorology, botany, medicine/pharmacology, psychology, agricultural engineering, plant genetics, ecology, social and political sciences, is based on thousands of years of observations and experiments in living nature. Jack Weatherford has documeted the incredible impact of the fruits of Native American science alone on all the world's cultures (Indian Givers, Crown Publishers, New York 1988).

14. If we take the single example of agricultural engineering, the modern high-tech Green Revolution cannot hold a candle to the sustainable productivity of highly developed Inca agriculture, or even to that of the traditional "permaculture" farming practised by the natives of India prior to colonization.

15. Green Revolution agriculture uses vast quantities of fossil fuel energy to produce machinery, fertilizers, pesticides and irrigation systems, all of which combine to irrevocably destroy soils and water tables, not to mention the destruction of the traditional communities of people who formerly owned and farmed the land. These people, who developed healthy, productive seed and varied crops over thousands of years on the same land, are now pressed into serfdom on huge mechanized farms that grow monoculture crops from sterile seed and will remain productive only for a limited time before the ground is reduced to saline desert (see The Violence of the Green Revolution by Vandana Shiva, Dehra Dun, India 1989).

16. Green Revolution statistics show greater yield of, say, rice per hectare than traditional methods, but they ignore the fact that the same hectares were not only producing rice, but fish, pigs, vegetables, fruit, fertilizer and mulch on soil/water that remained healthy with no chemical input. A century ago, a British agricultural expert toured India to see how he could best advise Indian farmers to improve their agricultural practices. His conclusion was that the Indian farms had more to give to the English in the way of advice, because they knew so much about soil composition and health, pest control, water management, crop breeding, and all other aspects of agriculture.

17. Yet in the present GATT discussions, scientists continue to promote the idea that nature can and must be technologically transformed by scientific techniques. Seed that was developed over thousands of years by indigenous

peoples or peasants is defined as "primitive cultivar" until brought into a laboratory, genetically altered and then patented for ownership (in direct violation of sacred contract living). If these GATT agreements go through, the indigenous peoples or peasants who developed seed will be fined for planting it unless they buy the seed from its new "owners!"

18. Inca agriculture developed hundreds of varieties of potatoes and many other carefully bred crops, feeding millions of people for thousands of years on the same lands. Their mountain agriculture included automatic irrigation systems and climate-control to prevent freezing. Only minimal work was required in their plough-free tabled fields. Freeze dried potatoes were among their inventions. Indigenous people without the urban social organization of the Inca were equally sophisticated in their agricultural practice (see Darrell Posey's position paper for this meeting).

19. Native navigational science was especially highly developed in the Pacific and required no compass. In addition to astronomy (navigation by stars) there was sophisticated knowledge of currents, weather patterns and fish and bird migrations to guide the swift, elegant outrigger canoes over vast stretches of ocean. These navigators were also trained to detect magnetic fields in their bodies (giving them "compass" directions) and to sense psychically their proximity to land.

20. Because we are accustomed to equating science and technology with mechanical instruments, machinery and all the material products of our culture, it is difficult for us to grasp the enormous scientific and technological prowess of peoples who consciously kept their material goods to a minimum in order to live in ecologically sound ways. Yet science is the systematic accumulation of knowledge about our natural world and technology is quite literally human artifice. However invisible much indigenous technology was, it often worked better than the mechanical technology of the modern world.

21. Consider birth control. Native peoples' science of ecology made them sensitive to how many people their land could support. If populations grew greater or less than optimal, they adjusted social rules (for example, how long nursing mothers were off-limits to men) and the use of herbal birth control accordingly. Overpopulation is a problem arising when communities in sound ecological balance with their surrounding world are destroyed and that balance is lost. Colonialism was devastating to indigenous communities wherever it was practised. Mining and monoculture farming was instituted on indigenous lands wherever possible, destroying the self-sufficient, independent and secure community. Later, this destruction was compounded by urbanization, which made people totally dependent on colonial jobs and institutions for their livelihood when their land was taken.

22. Populations were first decimated by diseases the colonizers brought and to which natives had no resistance; then, in Asia, Africa and parts of South America, they grew out of bounds. The fact that modern medicine saved lives may compensate for lives taken by diseases the white man brought, but it did not cause overpopulation as we have been told. Overpopulation is the reaction of insecure people whose former ecologically-sound community has been destroyed, their only remaining security lying in having enough children to hire out in wage slavery. Native North Americans, having resisted wage

slavery, were murdered outright (there is still a bounty law for killing Indians in Massachusetts!) or pushed onto ever smaller reservations, deprived of their economic bases, forced to adopt a foreign language, foreign forms of government, housing, education and religion in the concerted effort to destroy their cultures, then decimated by alcohol in their despair. As a result, most cultures were wiped out; those that survived never had a chance to "overpopulate".

23. Much indigenous science is extremely sophisticated in what we call "interdisciplinary sciences", such as geology/meteorology. The Hopi, for example, discovered that in the Southwest underground copper deposits draw down lightning, bringing life-giving rains to the desert. They know that mining can change weather patterns as surely as the Kogi know that deforestation and mining are drying the climate around them so their mountains no longer have adequate snow to feed the rivers on which their crops and lives depend. Both cultures have observed the destruction while the white man saw only the copper and the gold that would bring him wealth.

Survival conclusions

24. Native science uses the sacredness of nature as its guidepost to what should or should not be done by humans. To be sacred is to be inviolable, to be treated with utmost respect. To have a sacred contract with nature, as said above, is to care for it, protect it, give back to it as much as is taken. When the White Brother's inventive genius comes together with the Red Brother's deep wisdom, we will develop an appropriate technology that does not violate the Earth, but restores it and permits all creatures to live in health.

25. In terms of United Nations policy on indigenous peoples, it seems to me essential that:

(a) The United Nations sponsor an educational campaign designed to build respect for indigenous and traditional peoples; that supports them in telling their own histories and worldviews, and that makes clear that much land was taken from them by utterly unjustifiable means;

(b) The United Nations set up a world council of indigenous elders with international media coverage to advise world leaders (CEOs, international bankers, politicians, religious leaders, etc.);

(c) The United Nations immediately begin inviting indigenous elders, even before formal recognition of their nations, to address the General Assembly on critical world issues;

(d) The United Nations support indigenous peoples, who have survived the past half millennium of industrialization, in their land claim, lest the very basis for their existence be denied them further;

(e) The United Nations look very seriously into its policy of not recognizing indigenous nations existing within the borders of member nations, though these member nations have never legitimately acquired title to the aboriginal lands.

(f) Whenever indigenous nations have conflicts with industrialized nations, whether over patents on their intellectual property, independent nation status, land disputes, or other issues, the negotiations do not take place within the legal structure of one disputing party's culture: e.g. industrial society courts. Fair negotiations can be possible only in some compromise structure of discussion agreeable to both sides, possibly within the United Nations.

(g) Ethnobiological research be supported by the United Nations in ways that promote the conservation of indigenous and traditional cultures and actively prevent their exploitation.

(h) Appropriate technology be made available to indigenous peoples upon consultation with them.

26. In conclusion, as a western scientist, a planet biologist, I believe that indigenous peoples are the guardians of our species; the part of humanity that alone holds the wisdom to ensure our healthy survival.

WAYS AND MEANS OF STRENGTHENING SUSTAINABLE AND ENVIRONMENTALLY SOUND SELF-DEVELOPMENT OF INDIGENOUS PEOPLES

Background paper prepared by the
International Labour Office

Progress in legislation on the rights of indigenous peoples

1. In recent years national societies have embarked upon far-reaching and important changes that have made it necessary to define a new relationship between the State and civilian society. People in Latin America are increasingly convinced that the attainment of full democracy necessarily entails the recognition of the rights of indigenous peoples, of their cultural diversity and of their important role in the conservation of the environment.

2. At both the international and the national level, however, a whole series of problems in legislation and in legal and political practice have in the past hampered the recognition of the fundamental rights of indigenous people; and progress is still slow. Formally, of course, non-discrimination on grounds of race, nationality, religion or sex and the respect of individual human rights are embodied in the constitutions of all Latin American countries. Yet in practice the rights of indigenous peoples and of their communities are violated, inasmuch as the basic principles of the recognition of the existence of indigenous peoples and of their lasting nature is nowhere clearly spelled out. (One important exception is the Constitution of Brazil which will be dealt with subsequently).

3. Historically, the construction of the Nation-State in Latin America was based on the premise of the gradual "integration" of the indigenous peoples into their respective national societies and their disappearance as a separate entity as they are progressively brought into the mainstream of development and "modern society". The long-term objective was to create a culturally integrated and homogenous national society, without any indigenous peoples. In the event, however, this benevolent and paternalistic attitude took the form of complicated systems of trusteeship that denied the indigenous peoples any genuine role as full-fledged citizens. Development programmes, including projects aimed at the indigenous peoples, were accordingly influenced by the principles of "integration" and by the processes and mechanisms that went with them.

4. More recently this approach has been widely challenged, partly because of its obvious limitations and partly also because of the growth of indigenous organizations in the region and of their capacity to propose and defend programmes that offer a different future for their own peoples and their respective national societies. As a result, there has been a gradual but substantial change in legislation and in the relationship between the State and indigenous peoples at both the national and the international levels.

5. At the international level, new principles have been adopted with respect to the fundamental rights of indigenous peoples. Since 1982, following a decision of the Economic and Social Council of the United Nations and of the

Note: The opinions expressed in this paper are those of the ILO.

Commission on Human Rights, the Working Group on Indigenous Populations has been meeting each year to prepare the draft of a universal declaration on the rights of indigenous peoples. This document is scheduled to be considered and adopted by the United Nations General Assembly in 1983. In the mid-1980s ILO, in response to the indigenous organizations' desire to be more closely involved in the formulation and the implementation of guidelines for their own development that respect their cultural diversity, began the process of updating the Convention concerning the Protection and Integration of Indigenous and Other Tribal and Semi-Tribal Populations in Independent Countries, 1957 (No. 107), culminating in June 1989 with the adoption by the International Labour Conference of the Convention concerning Indigenous and Tribal Peoples in Independent Countries, 1989 (No. 169). This legal instrument is based on the principle of the lasting nature of indigenous and tribal peoples and establishes a series of procedures and conditions for them to be able to enjoy the benefits of development while ensuring that their diversity is respected and protected. So far the Convention has been ratified by Norway, Mexico, Colombia and Bolivia. The Legislative Congress of Argentina has just voted in favour of its ratification and the congresses of Brazil, Chile, Costa Rica, Ecuador and Peru are also considering the possibility of doing so. In 1989 the General Assembly of the Organization of American States (OAS) entrusted the Inter-American Commission on Human Rights with the preparation of an inter-American instrument on the rights of indigenous populations, for adoption in 1992. At their first summit meeting in Guadalajara, Mexico, in July 1991, the Heads of Latin American States adopted a declaration whereby, in addition to recognizing the multicultural nature of Latin American States and the valuable contribution of indigenous societies to national development, they undertook to respect and promote the cultural diversity and welfare of indigenous peoples. Under the Treaty of Amazonian Cooperation, the Foreign Ministers of the Member States set up a Special Committee for Amazon Indian Affairs (CEAIA) at their third meeting in Quito in 1989 and recognized the right of Amazonian indigenous organizations to participate with their respective Governments in the formulation and implementation of development programmes affecting them directly. In April 1991 this Committee adopted a series of regional programmes that devote priority attention to the demarcation, land rights and protection of indigenous territories. It is worth mentioning in this regard that the Governments of Colombia and Bolivia granted the indigenous peoples of the Amazon 18 million and 2.5 million hectares, respectively. Similar measures have been taken in Ecuador and Venezuela, and the Government of Brazil is currently engaged in the demarcation of extensive contiguous areas for the Yanomami peoples. In accordance with the terms of the Constitution and the timetable specified therein, the Brazilian Government has reiterated its determination to proceed with the demarcation of territories for the other ethnic groups in the country.

6. At the national level several countries have started to take a new view of the relationship between the State and the indigenous peoples and have adopted measures laying down new bases for that relationship. An outstanding example of this new approach is the 1988 Constitution of Brazil which has a separate chapter on Indian rights. This chapter recognizes the special relationship of indigenous peoples with their land and resources and sets a time-limit of five years to demarcate the indigenous areas. Other major advances were made in the Constitutions of Nicaragua in 1986 and, more

recently, of Colombia in 1991, while the Legislative Congresses of Mexico and Chile are currently discussing constitutional amendments that will recognize indigenous rights. Bolivia, Chile, Honduras and Venezuela are moreover currently drafting and discussing new laws on the subject.

ILO and indigenous and tribal peoples

7. ILO's interest in the situation and socio-economic conditions of indigenous and tribal peoples throughout the world goes back to the very origins of the Organisation. As early as the 1920s studies were conducted and Conventions adopted on the working conditions and methods of recruitment and employment of indigenous peoples. In 1957 the Conference adopted the Indigenous and Tribal Populations Convention (No. 107) which, unlike earlier legal instruments on the subject, contains provisions that are not limited exclusively to the conditions of work of indigenous peoples but extend to the cultural, social and economic life of those peoples and of their communities. Convention No. 107 recognizes their collective right to their land, to education in their own languages, to the practice of their own habits and customs in respect of the settlement of disputes and sanctions, and to their own forms of local self-government.

Convention No. 169

8. As mentioned earlier, Convention No. 169, which was adopted by the International Labour Conference in June 1989, revises substantially Convention No. 107. The new legal instrument is based on the premise of the lasting existence of indigenous and tribal peoples; the basic concepts that run through it are respect and participation. The Convention refers to "peoples" rather than "populations" in order to emphasize that it is not dealing with groups of individuals but with societies that have their own identity, dignity and social organization. Indeed, an awareness of their indigenous identity is one of the fundamental criteria for determining which groups the instrument applies to. It implies that no State or social group has the right to deny the identity to which an indigenous people may lay claim. Convention No. 169 further assigns to Government the responsibility for developing, with the participation of the peoples concerned, coordinated and systematic action to protect the rights of these peoples and to guarantee respect for their integrity. In applying the Convention Governments must consult the peoples concerned whenever consideration is being given to measures which may affect them directly. Furthermore, the indigenous peoples must have the right to decide the priorities and guidelines for their own development and to participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly. The provisions on land are particularly important as they include the concept of territories, which covers the total environment of the areas in which the peoples concerned live. They recognize the special relationship of indigeous live. They recognize the special relationship of indigenous peoples with the lands or territories which they occupy or otherwise use, and in particular the collective aspects of this relationship. The Convention stipulates that Governments must recognize the rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy and must take measures to safeguard their right to use lands to which they have traditionally had access for their subsistence and

traditional activities. Save in exceptional circumstances, and then only with their free and informed consent and through appropriate procedures established by national laws and regulations, indigenous and tribal peoples may not be removed from the lands which they traditonally occupy. Any relocation of these peoples as may be necessary in exceptional circumstances must be temporary, failing which the peoples must receive adequate compensation. Traditional procedures for the transmision of land rights among members of these peoples must be respected and adequate penalties established by law for unauthorized intrusion upon the lands of indigenous peoples by non-indigenous persons, together with measures to prevent such offences. The Convention also deals with recruitment and conditions of employment, vocational training, the promotion of handicrafts and rural industries, social security, health and education, and the promotion of contacts and collaboration between indigenous peoples across common borders. At the same time as it adopted the Convention in 1989, the International Labour Conference at its 76th session unanimously approved a resolution calling on Governments to ratify the Convention at the earliest possible time and to engage in a dialogue with the organizations and institutions of the peoples concerned so as to inform them of the content and objectives of the Convention. The resolution urges ILO: (i) to promote the ratification of the Convention; (ii) to develop technical cooperation programmes and projects addressing the severe poverty and unemployment affecting indigenous and tribal peoples; (iii) to facilitate the coordination of the activities of other specialized agencies in this field so as to achieve the objectives of the Convention.

9. Convention No. 169 is the most up-to-date international instrument on this subject and the only binding international standard for ratifying States. As such, it is especially important not only because of its implications for national law and practice but also because of the possibility it provides of influencing and guiding the work and policies of other development organizations concerned with indigenous issues.

Technical cooperation activities

10. Between the 1950s and the 1970s ILO's technical assistance activities for indigenous and tribal peoples were conducted essentially under the Andean Indian Programme. This multidisciplinary and inter-agency programme (involving several United Nations agencies such as FAO and UNICEF, as well as regional organizations such as IDB and the Inter-American Indian Institute) was designed to improve the conditions of life and work of the indigenous communities of seven Andean countries. During the 1970s and part of the 1980s ILO undertook rural development programmes to improve the employment and income opportunities of the poorest and most underprivileged segments of the rural population, without any special methodologies or projects for specific groups.

11. In recent years, at the request of the indigenous peoples themselves and of some Governments and international agencies, ILO has made a considerable effort to respond more appropriately and more effectively to the specific needs and aspirations of those peoples. Special attention has been devoted to the rights of indigenous peoples over their lands and resources. In most cases, land is the principal source of subsistence for the indigenous communities and the origin of their identity as separate societies. At the

same time, there is increasing evidence that indigenous systems of management, use and control of ecologically fragile areas, together with the know-how and technology that go with them, are "seed-beds" for alternative means of promoting the socially, culturally and ecologically sustainable development of these areas. The protection and improvement of indigenous models of ownership and use of land are therefore vital components of any programme for the conservation of the environment and the alleviation of rural poverty.

12. In Latin America, where several countries - especially in the Amazon - have introduced major constitutional and legislative reforms recognizing the rights of indigenous peoples over their traditional lands, ILO's work has focused on the promotion of policies and programmes that adopt a holistic approach to indigenous territory and on the participation of the indigenous communities in the use, management and protection of their lands.

13. Another important dimension of ILO's activities has been the enhancement of the technical and organizational capability of the competent national authorities to formulate and implement measures and programmes for the use, sustained management and control of indigenous territories, in close consultation and collaboration with the peoples concerned, as well as to resolve land disputes between indigenous and non-indigenous peoples fairly and efficiently.

14. With the collaboration of other intergovernmental bodies and by means of advisory services and cooperation projects, ILO has accordingly provided technical support to Governments, such as those of Bolivia, Brazil and Venezuela, and to regional entities such as the Amazonian Pact countries. In 1990, as part of a UNDP-financed policy formulation project for the indigenous peoples of the tropical regions of Bolivia, a number of instruments were drafted and adopted that made possible the taking of administrative measures recognizing the territorial rights of the Tacana, Sirionó and the communities of Bosque Chimanes and the Parque Isiboro-Sécura. At the same time, the legal and institutional machinery was set up to regularize within a short space of time the territorial situation of the other peoples of the eastern part of Bolivia, and steps were taken to create conditions conducive to a pattern of development that is in keeping with the peculiarities and aspirations of those groups. The project also contributes to the decision to give the Bolivian Indian Institute (INB) the status of a self-managed decentralized body and strengthen its role as the country's principle policy-making body for Indian affairs. More recently, four additional territories have been granted to other ethnic groups of the Bolivian lowland and an Indigenous Forest Guard has been set up to control these areas.

15. As regards the Amazonian Pact, ILO, at the request of the interim secretariat, has organized subregional seminars to provide the technical inputs and the necessary facilities for a discussion among international experts, government representatives and indigenous leaders on programmes for the demarcation of indigenous territories and the establishment of land rights and on community systems for the management and protection of tropical rain forests. The seminars were organized in Colombia, Bolivia and Brazil, in collaboration with other intergovernmental agencies such as the World Bank and the UNDP, and were designed to identify and analyse the principal institutional, legal and financial obstacles to the recognition of the land

rights of Amazonian Indian communities so as to be able to devise effective and adequate strategies and measures to accelerate the regularization of land ownership by those communities. The participation of a variety of different bodies in the seminars was intended to stimulate dialogue and lay the foundations of joint action.

16. ILO has recently been collaborating closely with IDB, UNDP and the International Fund for Agricultural Development (IFAD) on the creation of a Regional Fund for the Development of the Indigenous Peoples of Latin America and the Caribbean, an initiative of the President of Bolivia that was endorsed at the first summit meeting of Heads of Latin American States (Guadelajara, July 1991). One of the purposes of the Fund would be to facilitate access to the natural resources and to the necessary means for the subsistance and promotion of the indigenous peoples of the region. ILO has helped jointly with IDB, the Secretariat of the Fund and the Government of Bolivia, to draft the legal framework for the Fund. ILO will support, in collaboration with the coordinating body for indigenous organizations of the Amazon basin (COICA), consultations with the indigenous organizations of the Amazon on the scope and functioning of this new financial instrument. At the second summit meeting of the Heads of Latin American States in Madrid in July 1992, the Government of Bolivia will submit to the other Governments a draft multilateral agreement for the establishment of the Fund. ILO and IFAD have also conducted joint national missions to Bolivia, Brazil and Venezuela to discuss and define with the Governments and indigenous organizations the objectives, structure and functioning of a Regional Fund for the Promotion of the Indigenous Communities of the Amazon, and the various requirements and necessary conditions for its creation. This Fund will serve to conduct research into traditional models for the use and management of the rain forests, will foster an exchange of experience and know-how between the indigenous groups at the national and subregional levels and will promote the adoption of legal and administrative policies and measures and reconcile the conservation and protection of the Amazon with the demands and aspirations of the indigenous communities.

Recommendations

17. In order to facilitate the conservation, sustainable use and regeneration of ecologically fragile areas of Latin America and at the same time safeguard and promote the basic rights and development of the indigenous peoples, it is recomended:

(a) To harmonize national laws and regulations with respect to the legal status of indigenous peoples, the rights of indigenous communities to the natural resources of the territories they occupy and their access to those resources, and the responsibilities and duties of those communities in the management and conservation of the said territories;

(b) To promote legislation guaranteeing the exercise of indigenous rights and to enhance the efficiency and capability of the competent national authorities responsible for ensuring the effective protection of those rights;

(c) To formulate and implement environmental protection and conservation policies that recognize and make use of the know-how and traditional practices

of indigenous peoples and ensure their active participation in the management, administration and control of natural resources;

(d) To study with the participation of the indigenous peoples, their models and systems for the use and management of ecologically fragile areas, with a view to: (i) better understanding how they function and how they affect the natural and socio-economic environment; (ii) conserving them; and (iii) promoting their reproduction, with any improvements that may be appropriate, in other similar areas;

(e) To promote the exchange between indigenous communities and organizations of their experience and know-how in the use and management of the environment, in the implementation of successful productive projects based on the promotion of traditional and non-traditional products, and in the conduct of strategies for the consolidation of their lands and their protection against usurpation by any third parties;

(f) To establish and consolidate national and international machinery and channels for consultation and negotiation between Governments and indigenous and tribal peoples on any programme or initiative that affects them directly.